

STATE OF SOUTH CAROLINA

Combined Application for Certificate of Environmental
Compatibility, Public Convenience and Necessity and for a
Base Load Review Order for the Construction and
Operation on a Nuclear Facility at Jenkinsville, South
Carolina

BEFORE THE
PUBLIC SERVICE COMMISSION
OF SOUTH CAROLINA

COVER SHEET

DOCKET

NUMBER: 2008 - 196 - E

(Please type or print)

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DOCKETING INFORMATION (Check all that apply)

☐ Emergency Relief demanded in petition☐ Request for item to be placed on Commission's Agenda expeditiously☐ Other: _____

INDUSTRY (Check one)

NATURE OF ACTION (Check all that apply)

☒ Electric☐ Affidavit☐ Letter☐ Request☐ Electric/Gas☐ Agreement☐ Memorandum☐ Request for Certificati☐ Electric/Telecommunications☐ Answer☐ Motion☐ Request for Investigatic☐ Electric/Water☐ Appellate Review☐ Objection☐ Resale Agreement☐ Electric/Water/Telecom.☐ Application☐ Petition☐ Resale Amendment☐ Electric/Water/Sewer☐ Brief☐ Petition for Reconsideration☐ Reservation Letter☐ Gas☐ Certificate☐ Petition for Rulemaking☐ Response☐ Railroad☐ Comments☐ Petition for Rule to Show Cause☐ Response to Discovery☐ Sewer☐ Complaint☐ Petition to Intervene☐ Return to Petition☐ Telecommunications☐ Consent Order☐ Petition to Intervene Out of Time☐ Stipulation☐ Transportation☐ Discovery☐ Prefiled Testimony☐ Subpoena☐ Water☐ Exhibit☐ Promotion☐ Tariff☐ Water/Sewer☐ Expedited Consideration☒ Proposed Order☐ Other:☐ Administrative Matter☐ Interconnection Agreement☐ Protest☐ Other:☐ Interconnection Amendment☐ Publisher's Affidavit☐ Late-Filed Exhibit☐ Report



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January 30, 2009

VIA ELECTRONIC FILING

The Honorable Charles Terreni
Chief Clerk/Administrator
Public Service Commission of South Carolina
101 Executive Center Drive
Columbia, South Carolina 29211

RE: Combined Application of South Carolina Electric & Gas Company for a Certificate of Environmental Compatibility and Public Convenience and Necessity and for a Base Load Review Order for the Construction and Operation of a Nuclear Facility at Jenkinsville, South Carolina
Docket No. 2008-196-E

Dear Mr. Terreni:

In December 2008, the Public Service Commission of South Carolina ("Commission") conducted a hearing in the above-referenced docket. At the conclusion of the hearing, the Commission requested that the parties submit a proposed order or brief. Enclosed for filing, on behalf of South Carolina Electric & Gas Company, you will find a proposed order entitled "Proposed Siting and Base Load Review Order" for the Commission's consideration.

By copy of this letter, we are providing all other parties of record with a copy of the proposed order and enclose a certificate of service to that effect.

If you have any questions, please advise.

Very truly yours,

K. Chad Burgess

KCB/kms
Enclosures

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Lawrence P. Newton
Maxine Warshauer and Samuel Baker
Mildred McKinley
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(all via electronic mail and first class U.S. Mail)

The Honorable Gregrey Ginyard
Ruth Thomas
(both via first class U.S. Mail)

**BEFORE
THE PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA
DOCKET NO. 2008-196-E**

IN RE:

Combined Application of South Carolina)
Electric & Gas Company for a Certificate)
Of Environmental Compatibility and Public)
Convenience and Necessity and for a Base)
Load Review Order for the Construction and)
Operation of a Nuclear Facility in)
Jenkinsville, South Carolina)
_____)

**CERTIFICATE
OF SERVICE**

This is to certify that I have caused to be served this day one (1) copy of the
Proposed Siting and Base Load Review Order filed on behalf of South Carolina
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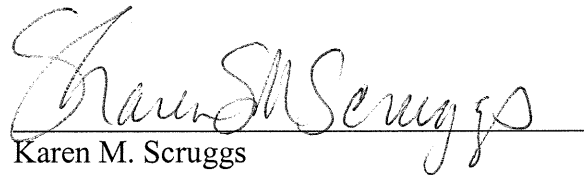
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Karen M. Scruggs

Columbia, South Carolina
This 30th day of January 2009

BEFORE

THE PUBLIC SERVICE COMMISSION OF

SOUTH CAROLINA

DOCKET NO. 2008-196-E – ORDER NO. 2009- ____

February ____, 2009

IN RE:)
)
 Combined Application of South Carolina)
 Electric & Gas Company for a Certificate)
 of Environmental Compatibility and Public)
 Convenience and Necessity and for a)
 Base Load Review Order for the)
 Construction and Operation of a Nuclear)
 Facility in Jenkinsville, South Carolina.)
 _____)

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PROPOSED ORDER

OF SCE&G

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BEFORE
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SOUTH CAROLINA
DOCKET NO. 2008-196-E – ORDER NO. 2009- ____
February __, 2009

IN RE:)
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Combined Application of South Carolina)
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Convenience and Necessity and for a)
Base Load Review Order for the)
Construction and Operation of a Nuclear)
Facility in Jenkinsville, South Carolina.)
_____)

PROPOSED
SITING AND BASE LOAD
REVIEW ORDER

I. INTRODUCTION

This matter comes before the Public Service Commission of South Carolina (the “Commission”) on the Combined Application (the “Combined Application”) of South Carolina Electric & Gas Company (“SCE&G” or “the Company”) which was filed with the Commission on May 30, 2008. That Combined Application seeks a Certificate of Environmental Compatibility and Public Convenience and Necessity and for a Base Load Review Order to construct and operate a two-unit, 2,234 net megawatt (“MW”) nuclear facility to be located at the V.C. Summer Nuclear Station (“VCSNS”) site near Jenkinsville, South Carolina (the “plant” or the “Units”). The Combined Application was filed pursuant to the provisions of the Utility Facility Siting and Environmental

Protection Act, S.C. Code Ann. §§ 58-33-10 *et seq.* (the “Siting Act”) and the Base Load Review Act, S.C. Code Ann. §§ 58-33-210 *et seq.* (the “Base Load Review Act”).

The Combined Application states that in order to meet the growing needs of its customers for electric power and to support the continued economic development of the State of South Carolina, SCE&G plans to construct two AP1000 Advanced Passive Safety Power Plants (“AP1000”) and associated facilities (“Units 2 and 3”) approximately one (1) mile from VCSNS Unit 1 (“Unit 1”). Units 2 and 3 will be constructed by a consortium consisting of Westinghouse Electric Company, LLC (“Westinghouse”) and Stone & Webster, Inc. (“Stone & Webster”). The anticipated commercial service date for Unit 2 is April 1, 2016 and the anticipated commercial service date for Unit 3 is January 1, 2019. Units 2 and 3 will be owned by SCE&G and the South Carolina Public Service Authority (“Santee Cooper”) jointly. SCE&G will own a 55% undivided share in both Units and their output and Santee Cooper will own the remainder. SCE&G will be the operator of the Units.

In its Combined Application, SCE&G also requested the Commission to approve revised rates to reflect its cost of capital applied to its projected investment in Units 2 and 3 as of June 30, 2008. The Company requested that the proposed revised rates be effective on issuance of a base load review order. As requested in the Combined Application, the proposed average increase to the residential class was 0.52%; small general service class was 0.48%; medium general service class was 0.51% and large general service class was 0.44%. SCE&G stated that the amount and percentage of these

rate increases would vary by rate schedules within these classes, and individual customer bill increases would also vary depending upon actual usage patterns and amount of consumption.

On June 18, 2008, the Commission's Docketing Department instructed the Company to publish by June 30, 2008 a Notice of Filing and Hearing in newspapers of general circulation in the areas affected by the Company's Application and to provide a copy of that notice to each affected customer. The Notice of Filing and Hearing indicated the nature of the Company's Combined Application and advised all interested parties wishing to participate in the docket of the manner and time for intervention or appearance as a public witness. On July 31, 2008, the Company filed affidavits with the Commission demonstrating that the notice was duly published in accordance with the Docketing Department's instructions and certified that a copy of the notice was provided to each electric customer in its monthly bill. As attested to by an affidavit from the Company's counsel, copies of the Combined Application were also served on the chief executive officer of each municipality, and the head of each State and local government agency charged with the duty of protecting the environment or of planning land use in the area in the county in which any portion of the facility is to be located.

Timely petitions to intervene in this docket were received from CMC Steel South Carolina ("CMC Steel"), Pamela Greenlaw ("Ms. Greenlaw"), Friends of the Earth ("FOE"), Mildred A. McKinley ("Ms. McKinley"), Lawrence P. Newton ("Mr. Newton"), the South Carolina Energy Users Committee ("SCEUC"), Ruth Thomas ("Ms.

Thomas”), Maxine Warshauer (“Ms. Warshauer”), Samuel Baker (“Mr. Baker”), and Joseph Wojcicki (“Mr. Wojcicki”). The Office of Regulatory Staff (“ORS”) is automatically a party to the proceedings in this docket pursuant to S.C. Code Ann. § 58-4-10(B) (Supp. 2007). The South Carolina Department of Health and Environmental Control (“DHEC”), South Carolina Department of Natural Resources (“DNR”), South Carolina Department of Parks, Recreation and Tourism (“DPRT”), and the Town of Jenkinsville were listed as parties based on the provisions of S.C. Code Ann. § 58-33-140 but did not appear or take part in the proceedings. *See also*, § 58-33-240(b) (such entities are recognized as parties only “to the extent [that they] seek to appear to raise issues”).

The Commission convened a hearing on this matter on December 1, 2008 with the Honorable Elizabeth B. Fleming, Chairman, presiding. SCE&G was represented by K. Chad Burgess, Esq.; Mitchell M. Willoughby, Esq.; and Belton T. Zeigler, Esq. ORS was represented by Nanette S. Edwards, Esq.; Shannon B. Hudson, Esq.; and C. Dukes Scott, Esq., FOE was represented by Robert Guild, Esq. and SCEUC was represented by Scott Elliott, Esq. CMC Steel did not appear at the hearing. Ms. Greenlaw, Ms. Warshauer, and Mr. Wojcicki each appeared *pro se*. At the commencement of the hearing, Mr. Newton waived his right to participate as an intervenor and instead made a statement as a public witness. Ms. Thomas did not appear at the hearing but without objection Ms. Greenlaw was permitted to sponsor the testimony of one witness whose testimony Ms. Thomas had caused to be prefiled in the docket. *See* Commission Order No. 2008-797. Ms.

McKinley appeared on the first and third day of the hearing but not thereafter. The remaining parties did not appear at the hearing.

In support of the Combined Application, the Company presented the direct testimony of Kevin B. Marsh, President and Chief Operating Officer of SCE&G; Stephen A. Byrne, Senior Vice President and Chief Nuclear Officer of SCE&G; Jimmy E. Addison, Senior Vice President and Chief Financial Officer of SCE&G; E. Elizabeth Best, Director of Financial Planning and Investor Relations for SCANA Services, Inc.; Steven J. Connor, Project Manager for Tetra Tech NUS, Inc.; Stephen E. Summer, Senior Environmental Specialist for SCANA Services, Inc.; Robert B. Whorton, Senior Engineer for SCE&G; Dr. Joseph M. Lynch, Manager of Resource Planning for SCE&G; David K. Pickles, Southern Region Vice President for the Energy Efficiency Practice for ICF International; Hubert C. Young, III, Manager of Transmission Planning for SCE&G; and Kenneth R. Jackson, Vice President, Regulatory Matters for SCANA Services, Inc. SCE&G Witnesses Byrne, Addison, Lynch and Jackson provided rebuttal testimony in addition to their direct testimony.

The ORS presented the direct testimony of A. Randy Watts, Program Manager of the Electric Department; Malini R. Gandhi, Deputy Director of Auditing; Douglas H. Carlisle, Jr., economist; Dr. Zhen Zhu, Senior Consulting Economist with C. H. Guernsey and Company; George W. Evans, Vice President of Slater Consulting; William R. Jacobs, Vice President of GDS Associates, Inc.; Jerry W. Smith, Senior Consultant at C. H.

Guernsey and Company; and Mark W. Crisp, Managing Consultant of C. H. Guernsey and Company.

SCEUC offered the direct testimony of Kevin W. O'Donnell, CFA, President of Nova Energy Consultants, Inc. FOE presented the direct and surrebuttal testimony of Nancy Brockway of Brockway & Associates. Ms. Thomas presented the direct and surrebuttal testimony of Dr. Ronald P. Wilder of the Moore School of Business, University of South Carolina.

The Commission also heard from 26 public witnesses at sessions held on December 1, 2008 and December 3, 2008.

II. STATUTORY STANDARDS AND REQUIRED FINDINGS

This proceeding concerns a Combined Application filed under the Siting Act and the Base Load Review Act and includes a request for the establishment of revised rates as provided for in the Base Load Review Act. Pursuant to the Siting Act the Commission must determine:

1. The basis of the need for the facility. S.C. Code Ann. §§ 58-33-270(A)(2); 58-33-160(1)(a);
2. The nature of the probable environmental impact. S.C. Code Ann. §§ 58-33-270(A)(2); 58-33-160(1)(b);
3. That the impact of the facility upon the environment is justified, considering the state of available technology and the nature and economics of the various

alternatives and other pertinent considerations. S.C. Code Ann. §§ 58-33-270(A)(2); 58-33-160(1)(c);

4. That the facilities will serve the interests of system economy and reliability. S.C. Code Ann. §§ 58-33-270(A)(2); 58-33-160(1)(d);

5. That there is reasonable assurance that the proposed facility will conform to applicable State and local laws and regulations issued thereunder, including any allowable variance provisions therein, except that the Commission may refuse to apply any local law or local regulation that is unreasonably restrictive. S.C. Code Ann. §§ 58-33-270(A)(2); 58-33-160(1)(e);

6. That public convenience and necessity require the construction of the facility. S.C. Code Ann. §§ 58-33-270(A)(2); 58-33-160(1)(f).

In addition, pursuant to the Base Load Review Act the Commission must issue findings that establish:

7. The reasonableness and prudence of the utility's decision to proceed with construction of the plant considering the information available to the utility at the time. S.C. Code Ann. § 58-33-270(A)(1);

8. The anticipated construction schedule for the plant construction including contingencies. S.C. Code Ann. § 58-33-270(B)(1);

9. The anticipated components of capital costs and the anticipated schedule for incurring them, including specified contingencies. S.C. Code Ann. § 58-33-270(B)(2);

10. The return on equity for setting revised rates established in conformity with Section 58-33-220(16). S.C. Code Ann. § 58-33-270(B)(3);

11. The choice of the specific type of unit or units and major components of the plant. S.C. Code Ann. § 58-33-270(B)(4);

12. The qualification and selection of principal contractors and suppliers for construction of the plant. S.C. Code Ann. § 58-33-270(B)(5);

13. The inflation indices used by the utility for costs of plant construction, covering major cost components or groups of related cost components. S.C. Code Ann. § 58-33-270(B)(6);

14. The specific initial revised rates reflecting the utility's current investment in the plant. S.C. Code Ann. § 58-33-270(C); and

15. The rate design and class allocation factors to be used in calculating revised rates related to the plant. S.C. Code Ann. § 58-33-270(D).

In making these determinations, the Commission is mindful that a Base Load Review Order constitutes a “final and binding determination that a plant is used and useful for utility purposes” and that the plant’s “capital costs are properly included in rates” contingent only upon the construction of the plant within the parameters of “the approved construction schedule including contingencies; and . . . the approved capital costs estimates including specified contingencies.” *Id.* at § 58-33-275(A). According to the act, “[s]o . . . long as the plant is constructed or being constructed in accordance with

the approved schedules, estimates, and projections set forth in Section 58-33-270(B)(1) and 58-33-270(B)(2), as adjusted by the inflation indices set forth in Section 58-33-270(B)(6), the utility must be allowed to recover its capital costs related to the plant through revised rate filings or general rate proceedings.” *Id.* at § 58-33-275(C).

This order is the first base load review order issued by the Commission. Consistent with the intent of the Base Load Review Act, the ORS has conducted an extensive audit and examination of SCE&G’s decision to construct the Units and the contracts, designs, and permits under which they will be constructed. In doing so, the ORS relied on the expertise of its staff supplemented by outside consultants with extensive experience in power plant construction, construction contracting, resource planning, transmission planning, load modeling, economics, and environmental and nuclear permitting. As the record shows, this ORS team conducted a detailed audit and evaluation of all aspects of the Company’s decision to proceed with construction of Units 2 and 3 and the plan for doing so, including the design and licensing of the proposed Units, and the Engineering, Procurement and Construction contract for their construction. Other parties have conducted similar reviews, and the Company has submitted extensive testimony from multiple witnesses concerning all aspects of the decision to construct these Units. At the hearing in this matter, the Commission heard from 22 witnesses including SCE&G’s senior leadership and the experts sponsored by the ORS and the intervenors. The rulings that follow are based on the record produced as a result of this testimony and analysis.

III. SITING ACT FINDINGS

A. The Basis for the Need for the Facility

Under the Siting Act, the Commission must find and determine the “basis of the need for the proposed facility.” S.C. Code Ann. § 58-33-160(1)(a). As Company President Marsh testified, SCE&G presently serves more than 640,000 electric customers in 24 counties in central and southern South Carolina. To meet the needs of those customers, SCE&G owns and/or operates ten coal-fired fossil fuel units (2,484 MW), one cogeneration facility (90 MW), eight combined cycle gas turbine/steam generator units (gas/oil fired, 1,319 MW), eighteen peaking turbines (347 MW), five hydroelectric generating plants (227 MW), one pumped storage facility (576 MW) and a two-thirds share (644 MW) of Unit 1 which it owns jointly with Santee Cooper. In 2007, the total net generating capability of all SCE&G facilities was 5,687 MW and its total supply capacity, when supplemented by two relatively small long-term purchases, was 5,745 MWs. This capacity was used to serve a 2007 peak demand of 5,248 MW, which resulted in an on-system reserve margin of approximately 9%. (Tr. II, p. 150, l. 3 – 6.)

To serve its customers reliably, and to account for extreme weather, unanticipated plant outages, and forecast uncertainties, SCE&G’s must maintain a certain amount of capacity above its forecasted peak demand in reserve. SCE&G’s established reserve margin target is 12% to 18% of forecasted peak demand.¹ (Tr. VI, p. 1338, l. 13 – 15.)

¹ To provide the necessary reserve margin in 2009, SCE&G made short-term off-system capacity purchases to supplement the 9% in system reserve margin referenced above.

As set forth in Exhibit G to the Combined Application, and as testified to by Company Witness Lynch, the Company forecasts that its firm territorial demand will grow 1.7% per year over the next 15 years. (Hearing Exhibit 12, JML-1, p. 1 – 3.) In his load forecast, Dr. Lynch assumed that future demand growth will be reduced or off-set by the new Federal efficiency standards for heating and air conditioning units, new Federal standards for residential and commercial lighting efficiency, and by the expiration of current wholesale contracts with the Cities of Orangeburg and Greenwood and the North Carolina Electric Membership Corporation. (Tr. VI, p. 1334, l. 3 – 15.) For those reasons, Dr. Lynch's 1.7% demand growth forecast is substantially less than SCE&G's historical retail load growth of approximately 2.5% per year during the past 15 years. *Id.*

Nevertheless, in light of anticipated demand growth, SCE&G's reserve margin will decline to 2% by 2016 unless new generating capacity is added before then. Adding the capacity represented by SCE&G's ownership portion of Unit 2 to the system in 2016 would increase SCE&G's reserve margin from 2% to 13.0% in that year. By 2019, the reserve margin would fall to -3.9% if no new generation has been added in the interim. Adding Unit 2 in 2016 and Unit 3 in 2019 would increase SCE&G's 2019 reserve margin to 16.8%. ² (Hearing Exhibit 12, JML-1, p. 1.)

² The reserve margins that Dr. Lynch forecasts with the additions of Units 2 and 3 are within SCE&G established range of target reserve margin. Even so, it is not unusual for the Company to exceed that target margin in years when new base load or intermediate capacity is added to SCE&G's system.

Dr. Lynch and Mr. Marsh also testified that demand growth is only part of the need SCE&G seeks to meet by adding Units 2 and 3. According to these witnesses, for the past 12 years, the Company has met demand growth on its system by adding peaking and intermediate resources to its generation fleet. As a result, they testified that the Company now has a specific need to add additional base load capacity to its system. (Tr. II, p. 150, l. 14 – p. 160, l. 4; Hearing Exhibit 12, JML-2, p. 1 – 11.)

Certain of the intervenors challenged the reliability of SCE&G load forecasts as a basis for assessing the need to construct Units 2 and 3. Those challenges included contentions a) that load forecasts like Dr. Lynch’s are generally too uncertain to support a decision as to the need for new capacity in 2016 and 2019; b) that Dr. Lynch’s load forecasts do not suitably account for additional Demand Side Management (“DSM”) related reductions in load growth that may occur in the future; and c) that it is imprudent to rely on current load forecasts in light of the sharp economic downturn that the nation is currently experiencing. Certain of the intervenors also challenged the Company’s testimony indicating that it has a specific need for base load generation in the 2016 and 2019 time period. Each of these challenges are discussed below.

1. The General Reliability of SCE&G’s Load Forecasts

Dr. Zhu testified that SCE&G’s load forecasts incorporate extensive economic data and analysis and are based on data and methodologies that are consistent with accepted industry standards and practices. (Tr. VIII, p. 1967, l. 7 – 13.) As part of the ORS audit of the Company’s filing, Dr. Zhu conducted a detailed review and analysis of

Dr. Lynch's forecasts. To measure the accuracy of these forecasts, Dr. Zhu compared Dr. Lynch's forecasts over the past seven (7) years with actual growth rates on SCE&G's system. (Tr. VIII, p. 1967, l.14-1.21; Hearing Exhibit 19, ZZ-3.) He also compared SCE&G's forecasted demand growth rates with the forecasted demand growth rates of other utilities in the region. (Tr. VIII, p. 1963, l. 11 – 13.) His conclusion was that Dr. Lynch's forecasts are accurate and reliable both in methodology and in historical results. (Tr. VII, p. 1967, l. 9 – 21.) He also concluded that the resulting load growth rates for SCE&G are consistent with the forecasts of other regional utilities. (Tr. VIII, p. 1963, l. 11 – 13.) Dr. Zhu concluded that Dr. Lynch's current forecast tends to take a conservative approach to measuring demand growth as shown by the fact that a) the current forecast does not assume that any wholesale load replaces the wholesale contracts with the City of Orangeburg, the City of Greenwood and the North Carolina Electric Membership Corporation that will expire during the planning period, b) current forecasts do not assume that major new industrial loads are added to the system during that time, and c) current forecasts do not assume that any new electric technologies or applications like electric vehicles place substantial loads on the system. (Tr. VIII, p. 1965, l. 15 – 1.19; Tr. VIII, p. 1968, l. 3 – 11; *see also* Tr. II, p. 159, l. 5 – 16.) The 1.7% demand growth rate that Dr. Lynch derived from these forecasts is 35% less than historical growth rates for the prior 15 year period. As Dr. Zhu testified, the conservative nature of these assumptions creates results that tend to understate the need for Units 2 and 3 rather than overstate that need. (Tr. VIII, p. 1968, l. 3 – 4.)

The reasonableness of Dr. Lynch's load forecast was further supported by Mr. Marsh who testified from an operational standpoint concerning the growth that the Company has experienced during the last 12 years. Mr. Marsh testified that SCE&G serves some of the most rapidly growing areas in South Carolina. According to his testimony, over the past twelve years, SCE&G has added some 149,000 new customers, which amounts to a 31% percent increase. (Tr. II, p. 153, l. 15 – 17.) Net of retirements, SCE&G installed 2,413 miles of new overhead line, 3,014 miles of new underground line, 86,065 new distribution transformers and 139,988 new service poles on its system since 1996. (Tr. II, p. 153, l. 17 – 20.) Mr. Marsh testified that while territorial growth rates may be slowed by the current economic downturn, the areas SCE&G serves will continue to be attractive places for residential and commercial growth in future years, and growth is anticipated to continue over the long term. (Tr. II, p. 188, l. 9 - 20.)

Certain of the intervenors, and FOE Witness Brockway, suggested that the inaccuracies in utility demand forecasts in the 1960s and 1970s, which led to an overbuild in base load capacity during that period, might be repeated here. (Tr. III, p. 417, l. 5 – 8.) They contended that concern about these inaccuracies was a reason to discount the Company's current demand forecasts and to deny the Company's application in this proceeding. However, the intervenors produced no specific evidence or expert analysis indicating that Company's current load forecasts are inaccurate in any specific way. The intervenors did not rebut Dr. Zhu's testimony concerning the detailed review and analysis he conducted of Dr. Lynch's forecasts nor did they conduct any such review

themselves. In addition, the record indicates that the forecasting errors of thirty years ago were based on specific conditions that are not present today. Specifically, thirty years ago, utilities were projecting compound growth rates of 6%-7% annually based on rates of air conditioning and appliance penetration that proved unsustainable as saturation levels were reached in the late 1970's. (Tr. III, p. 310, l. 12 – 25.) Current demand projections are much lower and are driven by new customers coming on the system more than by assumptions of increased power consumption by existing customers as were the forecasts in the 1960's and 1970's. (Tr. III, p. 310, l. 21 – p. 311, l. 4; Tr. VI, p. 1353, l. 4 – l. 10.) The record does not support the conclusion that SCE&G's current forecasts are subject to the same sorts of errors as were contained in demand forecasts of thirty years ago.

2. Accounting for Future DSM Effects

Several of the intervenors suggested that Dr. Lynch's forecasts were inaccurate because they failed to take into account the possible reductions in demand growth due to future DSM programs and increased conservation efforts by customers. The record, however, shows that SCE&G already includes substantial reductions in demand due to current and forecasted DSM efforts in its forecasts, and that its resource plans provide room for increased DSM contributions even if Units 2 and 3 are built. (Tr. II, p. 165, l. 8 - p. 169, l. 5; Tr. VI, p. 1335, l. 4 – p. 1336, l. 7; Tr. VI, p. 1350, l. 16 – p. 1353, l. 16; Tr. VI, p. 1361, l. 13 – 18.)

There are two principal types of DSM programs. Demand reduction DSM programs involve efforts to shift use of power away from peak periods. By shifting the time of energy use, such programs reduce the growth in the utility's peak demand. Energy efficiency programs involve efforts to reduce customers' overall energy consumption. Depending on the appliance or end use involved, energy efficiency programs may or may not materially affect peak demand.

a. Demand Reduction Programs

As Dr. Lynch testified, SCE&G has a very active demand reduction program which includes its interruptible load program, its standby generation program, its real time pricing program and its time-of-use rates. These programs are currently reducing SCE&G's peak demand by approximately 200 MW or by more than 4%. (Tr. VI, p. 1346, l. 15 – 18.) Dr. Lynch provided data showing that this 4% reduction is well above industry standards for utilities in this region. (Hearing Exhibit 12, JML-2, p. 5.) In addition, SCE&G uses two major generation sources, its Fairfield Pumped Storage Plant (576 MW) and Saluda Hydro (206 MW) as peak shaving units. The use of these units further flattens SCE&G's peak demand and reduces the need for additional capacity on its system to serve customers' peak requirements. (Tr. VI, p. 1347, l. 1 - 7.)

However, as Dr. Lynch testified, demand-related DSM programs reach a point of diminishing returns as existing programs flatten peak demand and customers have to be interrupted for longer and longer periods to move their loads outside what has become a longer peak period. (Tr. VI, p. 1346, l. 15 – p. 1349, l. 11.) Dr. Lynch testified that

given SCE&G's load shape, and the current level of participation in demand response programs, customers would need to agree to be interrupted for a total of two weeks a year to remove another 100 MW of demand from the system. (Tr. VI, p. 1348, l. 1 – 7.) In addition, as the required time of interruption is extended, the ability of the utility to rely on customers remaining on the program for the long term and interrupting or deferring their energy use as agreed is reduced. Dr. Lynch testified that SCE&G's current demand shifting programs have reached their saturation point as far as material reductions in the rate of future growth in peak demands are concerned. (Tr. VI, p. 1346, l. 15 – p. 1349, l. 11.)

b. Energy Efficiency Programs

The other category of DSM programs is energy efficiency programs. Like other utilities regulated by this Commission, SCE&G embarked on extensive energy efficiency programs in the 1980's which were significantly scaled back, with Commission approval, in the 1990's. Like these other utilities, SCE&G is in the process of revitalizing its energy efficiency programs in light of current energy prices, general economic conditions and the increased environmental concerns of its customers. As discussed below, SCE&G's witnesses testified that the Company is conducting a comprehensive study of potential new DSM offerings and is preparing to present a new suite of DSM programs for Commission review and approval in 2009. (Tr. VII, p. 1562, l. 13 – 20.)

Certain of the intervenors contend that the Company's demand forecasts cannot be relied on to predict future load until the effects of these new DSM programs can be

evaluated. However, as SCE&G's outside energy efficiency consultant Mr. Pickles testified, significant demand reductions due to the effects of current energy efficiency and demand reductions programs are already embedded in Dr. Lynch's forecasts.³ (Tr. VII, p. 1564, l. 4 – 19; Tr. VII, p. 1612, l. 15 – 22; *see also*, Tr. VI, p. 1357, l. 12 – 22.) In addition, Dr. Lynch's forecasts were adjusted to include a further 5% reduction in retail sales over the period 2011-2019 due to anticipated increases in the efficiency of heating and air conditioning units and residential and commercial lighting. (Tr. VI, p. 1358, l. 10 – 16; Tr. VII, p. 1612, l. 15 – 22.)

In addition, in light of the intervenors' claims, Dr. Lynch modeled SCE&G's future load assuming an additional 0.50 percentage point reduction in annual energy demand growth per year due to additional DSM programs. He found that this reduction had no material effect on the need for Units 2 and 3. (Tr. VI, p. 1358, l. 5 – 7.) By comparison, utilities in the Southeast averaged only 0.16 percentage point reduction in energy demand growth due to DSM programs in 2006. (Tr. VI, p. 1382, l. 10 - 12.) As both Dr. Lynch and Mr. Pickles testified, the available data and analysis all indicate that the achievable reduction in demand growth from increased energy efficiency programs

³ In this regard, it should be noted that the 209 MW savings listed as the DSM contribution to meeting peak requirements in the SCE&G Integrated Resource Plan ("IRP") represents only the supply-side contribution to meeting demand represented by the amount of load that SCE&G interrupts on short notice to meet its capacity reserve requirements during system peaks. In other words, the 209 MW is that portion of interruptible load that can be counted as a **generation resource** available to meet peak load. Energy efficiency programs reduce system demand and are embedded in the load forecast that is part of the IRP analysis.

will not materially change the forecasted need for Units 2 and 3. (Tr. VI, p. 1358, l. 5 – 7; Tr. VII, p. 1564, l. 17 - 19.)

Based on the evidence cited above, the Commission finds that additional savings due to DSM programs cannot be assumed to be a substitute for the base load capacity that SCE&G seeks to build. Dr. Lynch's forecasts and analyses have properly accounted for or analyzed the potential for additional DSM-related savings. Moreover, SCE&G's resource plans contain room for additional DSM related energy savings even with the addition of Unit 2 and 3 to the system. DSM is a useful supplement to the generation capacity needed on SCE&G's system. It is not a substitution for it.

c. SCE&G's Commitment to Expanded DSM Programs

The Company's Witness Mr. Pickles testified in detail concerning the scope and methodology of the "bottom up" DSM program analysis that he is presently performing for SCE&G along with SCE&G's DSM organization. As Mr. Pickles testified, the analysis includes the following:

- An assessment of currently-available DSM data specific to SCE&G's service territory and a gap analysis to identify critical information needs,
- The identification of a broad range of potential DSM measures and programs based on a national review of DSM programs and best practices,
- The determination of the peak demand and energy impacts of the most promising DSM measures based on a detailed evaluation of service territory-specific building practices, efficiency levels, weather, and

- The estimation of the current and future penetration of energy efficiency measures and their cost, including evaluation of free-ridership,
- The forecasting of the potential impact of the DSM programs using a variety of scenarios concerning incentive levels and program effectiveness,
- A benchmarking of results against the actual experience of other utilities and against other studies of the potential for DSM performed in other jurisdictions, and
- The development of DSM's supply curves and the analysis of the appropriate type, scale, and timing of future DSM programs in an integrated analysis alongside potential supply-side alternatives.

(Tr. VII, p. 1563, l. 1 – 23.)

SCE&G's President, Mr. Marsh, affirmed the Company's commitment to complete this thorough and comprehensive review of potential DSM programs and to bring the results to the Commission in 2009. (Tr. III, p. 297, l. 18 – p. 298, l. 10.) The Commission believes that these initiatives by the Company are important to the energy future of the State and directs the Company to complete a comprehensive and thorough DSM analysis along the lines that Mr. Pickles outlined and to present the findings and proposals for expanded DSM offering to the Commission for review no later than June 30, 2009.

3. Effects on Load of the Current Economic Downturn

Certain of the intervenors contend that the current economic downturn provides a reason to dismiss Dr. Lynch's current load growth forecasts as inaccurate. However, Dr. Lynch testified that he has continued to update his load growth forecasts to include the current economic data and forecasts up to the time of the hearing. (Tr. VII, p. 1539, l. 14 – p. 1541, l. 2.) He did so using the economic data and forecasts that the Company regularly receives from national economic consulting firms. *Id.* Dr. Lynch testified that this updated analysis showed that the impacts of the current economic downturn on load growth forecasts, while potentially significant in the near term, have only a minor impact on the load forecasts for 2016 and 2019, and that these impacts do not change the forecasted need for Units 2 and 3. (Tr. VII, p. 1540, l. 4 - 7.) He also testified that he analyzed the load growth patterns on SCE&G's system during and after major recessions over the past 30 years. Those data show that load growth on SCE&G's system slowed but did not stop even during the most severe of the historic recessions. When these past recessions ended there was an accelerated growth in load that offset much of the effect of the earlier growth reduction. (Tr. VII, p. 1539, l. 2 – p. 1542, l. 25.)

While the current economic downturn is a matter of concern to all South Carolinians, it is important that long-term infrastructure projects needed to meet the State's future energy demands not be shelved too quickly. To prosper and compete in global markets in the future, South Carolina will need efficient, reliable energy sources. The generation capacity SCE&G now seeks to build will take 12 years to complete, and

will serve the State for as many as 60 years thereafter. The Commission agrees with Company Witness Addison who testified that long-term decisions related to energy capacity should be based on the long-range needs of the system and the State economy, not shorter-term considerations.

4. Flexibility to Respond to Changes in Demand or Supply

An important consideration in assessing the need for Units 2 and 3 is their benefit to the system even if the demand or supply patterns are different than forecasted. It is possible that demand on SCE&G's system may grow faster than anticipated. If so, the benefits from choosing to build Units 2 and 3 at this time are likely to be greater than anticipated. But the record also shows that if DSM measures, alternative energy sources or adverse economic conditions reduce SCE&G's load capacity requirements significantly below forecast, Units 2 and 3 will still be quite valuable. Witness Marsh testified that at present 64% of SCE&G's base load capacity is in plants that were built between 1953 and 1973. (Tr. II, p. 158, l. 15 - 17.) These plants will be on average more than 50 years old by 2019 and may require substantial capital investments to meet reliability requirements and increasingly stringent environmental regulations. (Tr. II, p. 158, l. 17 - 18; p. 160, l. 20 - 22.) If load growth is slower than expected, adding Units 2 and 3 will allow SCE&G to reduce its reliance on its aging fleet of coal-fired plants, and perhaps even retire some of the less efficient plants. (Tr. VI, p. 1392, l. 9 – 13.) Allowing these older plants to be retired or used less intensively in the future could benefit the system in terms of reliability, environmental compliance and fuel efficiency.

The evidence indicates that the capacity represented by Units 2 and 3 will provide useful flexibility for SCE&G's generation in the future. Units 2 and 3 can provide significant benefits to SCE&G's system even if load growth during the coming decades is substantially below forecast.

5. The Company's Need for Base Load Capacity

Certain of the intervenors challenged the testimony of Dr. Lynch and Mr. Marsh that the Company has a specific need for base load capacity in the 2016-2019 time period. As the testimony of record indicates, base load capacity is fuel efficient generating capacity intended to run for thousands of hours a year and at high capacity factors. (Tr. II, p. 187, l. 22 – p. 188, l. 8.) Such plants are the foundation upon which an electric system operates and on which it relies for the majority of the energy used to serve customers. (Tr. II, p. 151, l. 8 – 13; Tr. II, p. 188, l. 3 – 8.) Peaking and intermediate units are intended to run for substantially fewer hours per year. (Tr. II, p. 152, l. 3 – 8.)

As Mr. Marsh testified, SCE&G last added a base load resource to its electric system when Cope Station went into commercial operation in 1996. (Tr. II, p. 155, l. 9 – 11.) Since that time, energy use on SCE&G's system has grown by 31%. (Tr. II, p. 155, l. 14 – 15.) By 2016, energy use on SCE&G's system is forecasted to have grown by a total of 44%. (Tr. II, p. 155, l. 15 – 17.)

Current operating statistics demonstrate the importance of base load generation to serving customers' energy needs. During 2007, base load plants constituted 56% of SCE&G's generation capacity. (Tr. II, p. 158, l. 6 – 7.) However, they produced over

80% of the energy used by SCE&G's customers during that year. Base load capacity—which represented 75% of SCE&G's generating capacity in 1996—is forecasted to drop to 45% as a share of total generation capacity by 2020 unless new base load resources are added in the interim. (Tr. II, p. 158, l. 9 – 12.)

Based on the foregoing, the Commission finds that the record supports the Company's testimony that the specific capacity need for 2016 and 2019 is most reliably and efficiently met through the addition of new base load capacity to its system. Units 2 and 3 represent such capacity.

6. The Single Unit Proposal

Certain of the intervenors suggested that the Commission should authorize SCE&G to build one new nuclear unit but not two. The record, however, does not support this proposal as being reasonable, economical or prudent. All U.S. utilities that have selected AP1000 units have opted to license and construct two units per site. As the record shows, the price SCE&G received from Westinghouse/Stone & Webster was premised on construction of two units in sequence, and substantial cost savings are included as a result. Moreover, SCE&G has partnered with Santee Cooper to build two units on a 55%-45% basis. As a result, SCE&G will only own the equivalent of 1.1 complete unit when the construction of both Units is complete. If the Commission were to deny SCE&G the authority to proceed with construction of the second unit, the first unit will have to be re-priced and the price per KW of that unit will rise by a significant

amount. (Tr. II, p. 162, l. 9 – 16.) There is no assurance that a new EPC contract could be successfully negotiated for one plant at terms that would benefit SCE&G's customers.

Approving only one unit places SCE&G in the position of paying a higher cost per KW for the capacity it builds and building only half of the capacity that it will need in the next 12 years. For these reasons, the Commission finds that approving only one unit would not be reasonable, economical or prudent as compared to approving two units as proposed by SCE&G.

7. Conclusion as to Need

Having carefully reviewed the evidence of record in this proceeding, the Commission finds that the load forecasts presented by Dr. Lynch and reviewed and audited by ORS Witness Dr. Zhu provide a reliable and appropriate basis for assessing the need for Units 2 and 3. The Commission finds that the Company has in fact demonstrated the need for the Units and the need to proceed with their construction.

B. Contribution to System Economy and Reliability

Having determined the need for the Units, the second finding required by the Siting Act is whether the Units "will serve the interests of system economy and reliability." S.C. Code Ann. § 58-33-160(1)(a).

1. System Economy

In evaluating the contribution of Units 2 and 3 to system economy, the Commission is required to assess a) the projected cost of power to SCE&G's customers if

Units 2 and 3 are built, as compared to b) the comparable cost to customers if alternative means of meeting demand are chosen. This analysis properly includes an assessment of all the costs of power from Units 2 and 3 and all the costs of power from the most competitive alternative supply resource or resources. The relevant costs include capital costs, operating and maintenance costs, fuel costs and environmental compliance costs. This competitive economic evaluation also properly includes an evaluation of the needs, condition and operating requirements of SCE&G's electric system as a whole, as well as the abilities of various supply scenarios to respond to uncertainties in such things as aggregate future fuel costs and environmental compliance costs.

SCE&G selected Units 2 and 3 as the appropriate resources to meet its 2016 and 2019 energy needs based on analyses performed by its Resource Planning Group over the period 2005-2008. (Tr. II, p. 160, l. 11 – p. 161, l. 7.) Those analyses compared the cost to customers from resource plans based on adding Units 2 and 3 to three principal alternative plans; 1) plans that relied on two coal generation plants of similar capacity to SCE&G's ownership portion of Units 2 and 3 supplemented by simple-cycle gas peaking units, 2) plans that relied on adding one, two or three units of combined-cycle gas generation supplemented by simple-cycle gas peaking units, and 3) plans that relied on simple-cycle gas peaking units exclusively. (Tr. VI, p. 1353, l. 22 – p. 1354, l. 9.) Based on these analyses, the Company determined that constructing Units 2 and 3 provided the best contribution to system economy of any alternative. (Tr. VI, p. 1358, l. 5 - 7.)

In conducting these analyses, the Company first performed a base case analysis which evaluated these four alternative supply scenarios using a consistent set of assumptions related to future fuel costs, environmental compliance costs and other costs. (Tr. VI, p. 1355, l. 7 – p. 1356, l. 8.) The Company then conducted sensitivity analyses in which these four competing generation plans were analyzed under varying assumptions related to these costs. As Company Witness Mr. Marsh testified, the Company's evaluation of these four alternatives also included a qualitative assessment of the alternatives against the strengths and weaknesses of the Company's current generation fleet, the operating needs of the electric system and the environmental compliance cost risks, fuel cost risks and operational risks inherent in SCE&G's current generation mix. (Tr. II, p. 170, l. 17 - p. 175, l. 2.)

As Mr. Marsh and Dr. Lynch testified, Units 2 and 3 emerged as the Company's preferred capacity option in each of these analyses, *i.e.*, the base case analysis, the sensitivity analysis and the qualitative analysis. (Tr. II, p. 170, l. 4 – 14; Tr. VI, p. 1355, l. 7 – p. 1357, l. 7.) ORS reviewed and audited these analyses, and ORS Witness Evans testified that they sufficiently analyzed reasonable alternatives to arrive at what will likely be the most economic plan to meet SCE&G's base load generation needs. (Tr. VIII, p. 2002, p. 21 – p. 2003, l. 2.)

As Dr. Lynch and Mr. Marsh testified, the quantitative analysis of capacity options principally focused on the relative cost of those units compared to coal or combined cycle gas generation. (Tr. II, p. 164, l. 19 – p. 165, l. 3; Tr. VI, p. 1353, l. 18 – p. 1354, l. 9.)

As Dr. Lynch's and Mr. Pickles' testimony shows, and as will be discussed more fully below, wind, solar, biomass and DSM programs were evaluated by the Company but did not emerge as competitive alternatives to nuclear, coal or natural gas fired generation. (Tr. II, p. 164, l. 12 – p. 169, l. 21; Tr. VI, p. 1339, l. 8 - 12.) (The contribution that DSM programs can make to system supply needs is by limiting demand growth and is discussed in the preceding section of this order.) In its testimony, the Company was careful to point out that it did not intend to minimize the role that wind, solar, biomass and DSM programs could play as a supplement to additional base load capacity in meeting future energy needs. SCE&G's current resource plans include room for substantially increasing the contribution to system requirements from these alternatives. (Tr. II, p. 165, l. 14 - 22.) However, for various reasons discussed more fully below, these sources are not a reasonable alternative to adding base load or intermediate generation resources to meet capacity needs in the 2016 and 2019 time period.

As to coal generation, the Company's analysis showed that such capacity would not be competitive with combined cycle gas generation primarily due to the cost of constructing fully environmentally-compliant coal plants, as well as the recent increases in the cost of coal, and the potential costs associated with CO₂ emissions from coal generation. (Tr. II, p. 165, l. 5 – 13.) As Dr. Lynch testified, coal was competitive with nuclear only on the assumption that there would be no costs associated with CO₂ emissions. (Tr. VI, p. 1356, l. 11 - 13.) SCE&G did not believe that to be a reasonable assumption in light of the current political and environmental climate and considering the

life-span of base load units. However, as Dr. Lynch testified, even if CO₂ costs are assumed to be zero, coal is still not the most competitive alternative to nuclear since under that assumption combined cycle gas generation is less expensive than coal. (Hearing Exhibit 12, JML-2, p. 9.) None of the parties contested SCE&G's conclusions related to coal generation.

The Company's analysis also showed that a generation plan based exclusively on simple-cycle gas generation was not competitive with combined-cycle generation under any set of cost assumptions. (Hearing Exhibit 12, JML-2.) Simple-cycle units are peaking units. Their much lower fuel efficiency results in higher overall costs to the system when they are relied on to serve what is predominantly a base load requirement. (Tr. II, p. 152, l. 3 - 8.)

As Dr. Lynch's testimony shows, the costs associated with future CO₂ regulation are a major driver in the comparative evaluation of nuclear generation, combined-cycle natural gas generation and coal generation. As compared to the nuclear generation scenario, a combined-cycle gas scenario would increase SCE&G's CO₂ emissions by 8,500,000 tons per year or 510,000,000 tons over the 60-year life of a plant. (Hearing Exhibit 12, JML-2, p. 3.) A coal scenario would increase SCE&G's emissions by 19,000,000 tons per year, or over 1.1 billion tons of additional CO₂ emissions over a 60 year plant life. (*Id.* at p. 4.) Given the magnitude of the increase in carbon emissions from the coal and natural gas scenarios, the cost analyses comparing combined-cycle gas

generation and coal generation to nuclear are quite sensitive to assumptions concerning future CO₂ compliance costs.

The base case scenario prepared by Dr. Lynch's group showed that Units 2 and 3 would be more economical than combined-cycle gas generation if it is assumed that the cost of CO₂ emissions is \$15 per ton or more beginning in 2012 and escalates at 7% per year in the ensuing years. (Tr. VI, p. 1355, l. 18 - 20.) (The 7% escalation number reflects the inflation assumptions contained in earlier Federal CO₂ legislation that would inflate the CO₂ charges by the rate of underlying inflation plus 5 percentage points.) (*Id.* at 1358, l. 21 - 22.) Under the \$15 per ton assumption, combined-cycle generation would cost customers on average \$15.1 million per year more than nuclear generation and coal generation would cost \$94.9 million more. (*Id.* at 1356, l. 1 - 2.) But as Dr. Lynch testified, the \$15 per ton assumption is unrealistically low given the level of CO₂ charges that would be required to trigger a significant reduction in CO₂ emissions nationally –which would be the goal of such a charge. (*Id.* at 1359, l. 1 - 4.) At a more realistic but still low \$30 per ton assumption, the cost to customers of combined-cycle gas generation would exceed the cost of nuclear generation by \$125.7 million per year and coal generation would cost customers \$267.5 million per year more. (Hearing Exhibit 12, JML-2, p. 9.)

Sensitivity analyses were conducted on these results to determine how they might be affected by factors such as higher uranium prices, lower gas prices, reduced reliability of aging coal plants, the forced retirement of such plants, and zero cost for CO₂

emissions. In these analyses, combined cycle gas generation emerged as more economical than nuclear only in cases of lower than anticipated natural gas prices (and at \$15 per ton CO₂) or zero CO₂ costs. (Tr. VI, p. 1356, l. 2 – 14.)

Based on these studies, the Company's Resource Planning Department concluded that nuclear generation was the most economical resource to meet SCE&G's future supply needs. (Tr. VI, p. 1361, l. 19 – 22.) This conclusion was supported by the testimony of Mr. Marsh and Mr. Byrne, who reviewed it from the perspective of SCE&G's generation fleet as a whole, including its operational status, fuel mix, and fuel and environmental compliance costs and risks. (Tr. II, p. 157, l. 4 - 14; Tr. III, p. 554, l. 16 - 19.) Dr. Lynch testified that the fossil fuel plants (coal and gas) currently represent 73% of SCE&G's generation capacity, and if a combined-cycle natural gas plan were chosen over nuclear, they would represent 79% of that capacity in 2020. (Hearing Exhibit 12, JML-2, p. 2.) Dr. Lynch also testified that adding the additional nuclear capacity would decrease reliance on fossil fuels and therefore lead to a more balanced fuel mix for the system. *Id.*

Mr. Marsh and Mr. Byrne testified that in recent years the fossil fuels on which the Company relies, have become increasingly uncertain both as to price and supply and are increasingly subject to the risks and volatility of global commodity markets. (Tr. II, p. 171, l. 8 – 16; Tr. III, p. 561, l. 19 – p. 562, l. 2.) In addition, they testified that combined-cycle natural gas generation is intermediate capacity and not, strictly speaking, base load generation. (Tr. II, p. 152, l. 3 – 8; Tr. III, p. 561, l. 11 - 13.) Adding

intermediate capacity to the system, instead of true base load capacity, would increase the Company's reliance on its aging fleet of base load plants and increase the price risk to customers if operational problems or future environmental restrictions limited the use of those plants. (Tr. III, p. 632, l. 16 – p. 633, l. 8.) As Dr. Lynch testified, if the base case analysis is adjusted to reflect an increased forced outage rate for SCE&G's existing coal plants in future years, the nuclear strategy saves customers an additional \$28.8 million dollars per year over the combined-cycle gas generation scenario (\$44.9 million per year savings as opposed to \$15.1 million in the unadjusted study). (Hearing Exhibit 12, JML-2, p. 10.) Similarly, if the base case is adjusted to reflect the early retirement of the Company's smaller and older coal plants, the savings are an additional \$60.6 million per year (\$75.7 million per year compared to the same \$15.1 million). (*Id.*) For these reasons, the Company's leadership determined that, in addition to its other advantages, building Units 2 and 3 will serve to strengthen the Company's aging base load capacity portfolio, diversify the Company's fuel mix and reduce customers' exposure to the risks and volatility of fossil fuel markets and supply.

a. Alternative Supply Resources

Certain of the intervenors contend that the Company's analysis of the economics of its supply choices are flawed because the Company failed to adequately consider alternative energy resources including wind, solar, landfill gas, and biomass and DSM/energy efficiency programs, or some combination of all of them. (Tr. III, p. 364, l. 13 – 19.) The Company's witnesses however, clearly indicated that these energy sources

were considered but were determined not to be reasonable alternatives to new base load or intermediate generation at this time. (Tr. VI, p. 1369, l. 1 – 8.)

Landfill gas generation is one of the alternative energy sources that was considered in the Company's analysis of supply alternatives. (Tr. VI, p. 1339, l. 10 - 12.) Landfill gas is methane produced from the decay of organic matter in large municipal waste landfills. (Tr. II, p. 166, l. 2 - 3.)

Landfill gas is a limited resource because there are a limited number of landfill sites in South Carolina with suitable size and conditions for commercial methane production. (Tr. II, p. 166, l. 2 - 3.) In addition, the amount of energy these facilities can produce is quite small—approximately 5 MW per site—compared to the 1,228 MW of base load capacity SCE&G requires. (Tr. VI, p. 1343, l. 12 - 14.) Santee Cooper is already developing or is preparing to develop many of the suitable landfill gas sites in South Carolina. (Tr. VI, p. 1343, l. 18 - 21.) Given the limited number of sites and small output of these facilities, the Company concluded that they are not a reasonable substitute for the 1,228 MW of capacity that SCE&G will receive from Units 2 and 3. In light of the evidence of record, the Commission finds that the Company properly concluded that landfill gas generation was not a reasonable alternative source of capacity to meet SCE&G's needs at present. (Tr. VI, p. 1344, l. 3 – 4.)

Similarly, biomass generation is limited by the quantities of forestry waste and agricultural material that are available and suitable for use as biomass fuel. (Tr. II, p. 166, l. 1 – 8.) Two comprehensive studies have been done by third parties on the

availability of this resource in South Carolina. (Tr. VI, p. 1345, l. 1 – p. 1346, l. 2.) Both indicate a theoretical potential for about 491 MW of such generation statewide, which would mean that there would be approximately 132 MW of potential biomass capacity in SCE&G's territory. (*Id.*) In addition, as Dr. Lynch testified, biomass plants tend to be more expensive to build than traditional generation sources. (Tr. VI, p. 1344, l. 14 – 17.) They have limited fuel efficiency, and therefore are not cost competitive with traditional generation sources even where sufficient fuel is available. (Tr. VI, p. 1344, l. 14 – 17.) Considering these facts, the Company properly concluded that biomass generation is not a reasonable alternative source of supply to meet its need for base load capacity in the 2016 and 2019 periods.

The Company also considered solar and wind power as potential alternative sources of energy. (Tr. VI, p. 1339, l. 11.) As Dr. Lynch, Mr. Marsh, and ORS Witness Evans testified, South Carolina is not well-suited climatologically for either wind or solar power. (Tr. II, p. 166, l. 9 - 10; Tr. VI, p. 1368, l. 12 – 13; Tr. VIII, p. 2140, 4 – 12.)

The potential for wind generation in South Carolina is limited due to low average wind speeds. (Tr. VI, p. 1341, l. 4 - 5.) The only place where there is sufficient wind to support wind generation is off the South Carolina coast. (Tr. VI, p. 1342, l. 19 – 20.) The feasibility and cost of building wind-farms offshore in hurricane-susceptible areas like those off the South Carolina coast have not been demonstrated. (Tr. VI, p. 1343, l. 3 – 5.) Solar generation is limited by the relatively low amounts of solar radiation that

reaches the ground in South Carolina due to atmospheric conditions (*i.e.*, cloud cover, rain and haze). (Tr. II, p. 166, l. 9 – 10.)

Both types of facilities would have very low capacity factors in South Carolina, 20% or less for solar and 30%-35% for off shore wind. (Tr. VI, p. 1339, l. 19 – 20; p. 1343, l. 5 – 8.) These low capacity factors mean that, in practice, wind and solar facilities will produce only a small fraction of their theoretical output compared to nuclear plants which typically generate more than 90% of their rated capacity year in and year out. (Tr. VI, p. 1372, l. 16 – 18.) In addition, both wind and solar are very expensive forms of generation in terms of their capital costs. The cost per MW of solar power substantially exceeds nuclear and other traditional generation sources, and as the FOE Witness Mrs. Brockway has stated, solar power is the most expensive form of power generation in commercial use today. (Tr. III, p. 486, l. 19 – 24; p. 487, l. 1 – 3.) Wind generation is also quite expensive and is primarily being built in locations where subsidies or green-power mandates—rather than inherent economics—support its use. (Tr. VI, p. 1343, l. 5 – 6; p. 1387, l. 21 - 23.)

Furthermore, both wind and solar power are not “dispatchable” resources, meaning that the amount of energy that they produce cannot be varied with the needs of the customers. (Tr. VI, p. 1340, l. 1 – 2; p. 1341, l. 20.) Wind resources may or may not be available at the time of system peak, depending on atmospheric conditions at the time. (Tr. VI, p. 1340, l. 21 - 22.) In this regard, the testimony shows that the average wind speeds are slowest in South Carolina during daylight hours in the summer when

customers' power needs are greatest. (Tr. VI, p. 1372, l. 19 - 22; p. 1373, l. 1 - 11; Hearing Exhibit 12, JML-8.) As to solar, SCE&G's system peak most often occurs on summer afternoons after 4:00 PM, even in optimal conditions solar panels can generate only about 20% of their theoretical capacity. (Tr. VI, p. 1340, l. 1 - 9.)

For those reasons, the capacity that wind and solar resources represent must be discounted heavily in assessing a utility's net reliable generation capacity. For example, Texas has some of the best conditions for wind generation of any state in the nation, but its transmission system operators allow utilities to count only 8.7% of installed wind generation capacity as net reliable capacity for meeting peak requirements. (Tr. VI, p. 1371, l. 13 - 16.) This means that additional, duplicative generation capacity must be maintained on the system equal to 91.3% of a utility's wind capacity.

For all these reasons, the Company properly concluded that, at this time, wind and solar generation do not represent reasonable, economically competitive alternatives to meet the customers' need for additional base load capacity in the 2016 and 2019 time period. As mentioned above, the Company was careful to point out that it in no way intends to minimize the potential future contribution of these energy sources to meeting customers' needs, and its future supply plans retain room to accommodate significant contributions from these sources in future years if possible. However, for purposes of meeting customers' need for base load power in the 2016 and 2019 period, the Company has properly concluded that wind, solar, landfill gas, and biomass do not constitute resources on which it can prudently and economically rely at this time.

b. The Cost of Nuclear Construction

FOE and other intervenors contend that the Company's projected cost of Units 2 and 3 is unreasonably low, and that this low cost skews the economic analysis in favor of nuclear generation. (Tr. III, p. 364, l. 9 - 22.) This issue was one of the principal points of contention by intervenors in the hearing. FOE and others took the position that the unreasonably low projected cost of the Units created the lack of a reasonable basis on which to assess the cost of Units 2 and 3 compared to other alternatives.

i. The Unit 2 and 3 Cost Compared to Reported Data

The intervenors' testimony on this matter, however, is ambiguous. In her testimony, FOE Witness Ms. Brockway cited certain publications and reports indicating the all-in or future dollar costs of nuclear generation are estimated to be in the range of \$4,000/KW to \$8,000/KW. (Tr. III, p. 388, l. 5 - 20.) Ms. Brockway indicated that she was not able to determine the comparable costs per KW for Units 2 and 3. (Tr. III, p. 387, l. 17 - 18.) However, the public version of the Combined Application states that the cost in future dollars of SCE&G's 1,228 MW share in Units 2 and 3, including owner's costs, transmission, inflation, Allowance for Funds Used During Construction ("AFUDC" or capitalized interest) and contingencies, is \$6.3 billion or \$5,141/KW. (Hearing Exhibit 16, EEB-1-P, p. 3.) This figure is well within the range of costs Ms. Brockway's indicated to be the current industry estimates in her testimony.

In addition, Ms. Brockway cited an October 2, 2008 press release which indicates that the U.S. Department of Energy's loan guarantee program under Title XVII of the

Energy Policy Act of 2005 received initial applications for 21 nuclear units with an aggregated cost as stated in the applications of \$188 billion. (Tr. VII, p. 388, l. 24 – 27.) Mathematically, this would indicate approximately \$9 billion for each unit. (Tr. VII, p. 388, l. 24 - 27.) However, the release does not provide information concerning the type or size of the Units in question (the leading Areva and GE units at 1,600 MW and 1,550 MW respectively are approximately half-again the size of a 1,100 MW AP 1000 unit and are priced accordingly). (Tr. III, p. 565, l. 10 – p. 566, l. 5.) Nor does the release provide information concerning, the inflation assumptions and the expected completion dates of the plants, whether or not the requested amounts includes AFUDC, the amount of contingencies contained in the cost estimates, and whether the sites are green-field sites or sites that already have been studied and developed for nuclear generation, the foundation conditions at the site and the amount included for other site-specific costs such as transmission, rail or other transportation upgrades. As a result, the DOE press release is not a reliable basis on which to evaluate the price projections for Units 2 and 3.

ii. The Reliability of the EPC Contract Price

On the other hand, the Company's cost projection for its share of Units 2 and 3 is based on a fully negotiated and executed EPC Contract with a leading supplier of nuclear generation facilities. (Tr. III, p. 578, l. 1 - 9.) More than half of the EPC Contract cost is subject to fixed pricing (*i.e.*, pricing with no escalation) or firm prices with adjustment provisions (*i.e.*, prices that are fixed in current dollars but have clearly defined inflation

adjustments). (Tr. III, p. 592, l. 5 – 7.) As the EPC Contract indicates, most of the equipment and components of the plant that are uniquely nuclear in nature are subject to firm and fixed pricing.

In addition, the largest components of the contract price that are not subject to firm or fixed pricing are subject to clearly-established price targets. (Tr. III, p. 593, l. 1.) These target price components include the “craft” or construction labor for the project, and certain standard buildings such as warehouses and administrative spaces. (Tr. III, p. 592, l. 18 - 22.) As to these target price components, the EPC Contract contains important incentives for the EPC contractors to bring the project in below those targets as adjusted for actual inflation. (Tr. III, p. 593, l. 11 - 22.) In addition, the contractors are at risk to lose substantial amounts of their profit on the work if those price targets are not met. (Tr. III, p. 593, l. 11 - 22.) These provisions of the EPC Contract constitute meaningful incentives for the EPC contractors to ensure that target prices are reasonable and to manage the project to meet them. (Tr. III, p. 593, l. 7 - 14.) As a result, the EPC Contract provides a reliable basis on which to evaluate SCE&G’s cost of nuclear construction for the purpose of Dr. Lynch’s competitive economic studies.

iii. Contingencies as a Component of Cost

An important part of evaluating the reasonableness of the Company’s price projection for the Units is evaluating the degree to which they include reasonable provisions of contingencies and inflation over the construction period, as the Base Load Review Act envisions.

As to these contingencies, Company Witness Addison testified that the capital cost estimates included in the Company's price forecasts include a pool of contingency funds above those already included in the EPC Contract cost and the owner's cost and transmission cost estimates. (Tr. IV, p. 921, l. 14 - 16.) The amount of that contingency pool is \$438,293,000 in 2007 dollars, subject to escalation. (Hearing Exhibit 16, EEB-1.) This contingency pool represents approximately 10% of the base cost of the Units. This amount of contingency is reasonable in light of what is known about the project and its risks today. It provides further assurance that the Company's price projections do not underestimate the cost of nuclear capacity and so provide a reasonable basis for comparing nuclear capacity to other alternatives.

iv. Inflation as a Component of Cost

The Company's price projection also includes \$1.5 billion in assumed inflation over the construction period. (Hearing Exhibit 16.) In contesting the accuracy of the Company's cost projection, FOE Witness Ms. Brockway suggests that the inflation component of the Company's price projection may be too low. (Tr. III, p. 394, l. 2 - 8.) (The general reasonableness and suitability of the Handy-Whitman and other inflation indices included in the EPC Contract and the Combined Application is discussed in more detail below.) However, as shown in Exhibit I, Chart B (Hearing Exhibit 16, EEB-2, p. 5.) to the testimony of Company Witness Best, the inflation rates used in creating the Company's price projection are actual 2007 rates, including the current-year rate for 2007 and the five-year average 2003-2007. Given the high level of inflation in utility

construction in the 2003-2007 time period, these rates are significantly higher than historic inflation rates for these indices. (*See generally*, Tr. VII, p. 1675 - 1677.) For example, the Handy-Whitman All Steam and Nuclear escalation rate, which is the principal rate used in escalating the target price component of the plant, showed current year inflation of 7.7% for 2007 and a five year average of 5.75%. In 2002, the current year rate was 2.8% and the five year average was 2.5%. (Hearing Exhibit 16, EEB-2.) The other indices show a similar relationship between the inflation rates used in calculating the \$6.3 billion projection and the inflation rates from prior periods. (*Id.*)

While inflation indices will vary from year to year, if history is any guide, the rates SCE&G has used to project the cost of Units 2 and 3 are not likely to understate actual inflation rates over the 12 year construction period of the plant. Accordingly, the Commission finds that the inflation rates used in deriving the Company's projection of construction prices for the Units do not understate that the likely cost of the plants for comparative economic evaluations are significantly higher than historical averages.

v. Delay as a Cost Risk

FOE Witness Ms. Brockway also testified that delays in the construction schedule for Units 2 and 3 might be assumed to cause the ultimate costs of the Units to exceed the current projections. (Tr. III, p. 394, l. 12 - 15.) The completion dates for the Units, however, are subject to contractual guarantees. The EPC contractors have committed to complete the first Unit by 2016 and the second by 2019. They will pay substantial liquidated damages if they fail to meet this schedule. (Tr. III, p. 598, l. 13 – 14; p. 364,

l. 14.) The Company is at risk for regulatory delays, but as to such delays, Company Witness Byrne testified the NRC licensing schedule for the plant and the construction schedule contained in the EPC Contract are reasonable. (Tr. III, p. 635, l. 7 - 14.) Furthermore, as Company Witness Addison testified, inflation represents roughly 24% of the Company's construction price projection. If the entire construction schedule were shifted out by 30 months, or approximately 20%, and assuming inflation occurs consistently as projected, that would change the price of the plant only by approximately 5%. For these reasons, the Commission does not find support for the contention that the risk of delay is a reason to discount the nuclear construction costs of which Dr. Lynch relied to be unreliable.

vi. Conclusion as to the Cost of Nuclear Construction

For all these reasons, the Commission finds that SCE&G's analysis of the costs of nuclear generation as compared to other alternatives is based on a reasonable assessment of the cost of Units 2 and 3. Those costs have been reasonably estimated by the Company and do not constitute a flaw in the Company's analysis of the comparative economics of alternative generation resources as suggested by the intervenors.

c. The Ability of the Plant to Meet Projected Capacity Factors

Dr. Wilder, testifying on behalf of Ms. Thomas, contested SCE&G's ability to operate Units 2 and 3 at the capacity factors projected in the comparative supply analyses. (Tr. VI, p. 1283.) This argument goes to the relative cost of nuclear production

compared to other alternatives. (Tr. VI, p. 1284.) Company Witness Mr. Byrne testified in rebuttal that improvements in nuclear plant capacity factors over the past decades have been due to improvements in things like preventive and predictive maintenance programs, inspection and testing of equipment, staffing, training, human performance management, management of nuclear operating culture, fitness for duty standards, root cause analysis of problems and events, management of engineering processes, outage scheduling and management, and vendor and supplier quality control. (Tr. III, p. 636, l. 2 - 16.) These improvements apply across the board to nuclear operations, independent of the specific design of the Units in question. (Tr. III, p. 636, l. 8 - 9.) Mr. Byrne also testified that SCE&G intends to use the personnel and nuclear operating culture it has established at Unit 1 as the basis for establishing the staffing and operating culture for Units 2 and 3. (Tr. III, p. 636, l. 17 - 19.) In addition, as Mr. Byrne testified, Westinghouse AP1000 technology represents an updated design of the Westinghouse pressurized water reactor technology currently in use at Unit 1. Moreover, the AP 1000s' passive safety systems should make the new Units simpler and less expensive to operate and maintain than earlier Westinghouse units. (Tr. III, p. 572, l. 11 - 19.) Based on all these factors, the Commission concludes that the anticipated capacity factors for Units 2 and 3 as included in Dr. Lynch's resource planning analyses are reasonable and appropriate for use in evaluating long-term nuclear operating costs.

d. Conclusion as to System Economy

The Company's witnesses testified extensively in support of the reasonableness of the price, schedule and cost projections on which the decision to select Units 2 and 3 was made. The EPC Contract, the inflation and contingency adjustments, the project schedule and the cost projections presented by the Company have been extensively reviewed and audited by the ORS staff experts, as well as by the independent outside experts in generation plant construction that ORS has employed to assist in the audit of the Combined Application. (Tr. VIII, p. 1903, l. 21 – p. 1904, l. 2; Tr. VIII, p. 1954, l. 5 – 18.) Those ORS witnesses have testified that their audit and review confirmed the reasonableness of the projections and assumptions contained in those documents. (Tr. VIII, p. 1954, l. 5 – 18.)

For all these reasons, the Commission finds that the cost projections and comparative economic analyses on which the selection of Units 2 and 3 was made are reasonable and appropriate. Based on these specific economic analyses, and the broader evaluation of system needs by SCE&G's leadership team, the Company properly concluded that the construction of Units 2 and 3 would provide the greatest and most dependable contribution to system economy of all reasonably competitive alternatives.

2. Contribution to System Reliability

In evaluating the contribution of Units 2 and 3 to system reliability, the Commission is required to assess the ability of the facility when constructed to operate reliably and to support reliable electric service to SCE&G's customers. One intervenor,

Mr. Wojcicki, challenged the proposed site of Units 2 and 3 as being unsuitable from a reliability standpoint because of concerns about the sufficiency of water supply for the Units during drought conditions and because of their location in relation to system load centers.

a. Water Supply

As to the sufficiency of water supplies, the record shows that Units 2 and 3 will benefit from a unique combination of water resources available at the site. Units 2 and 3 will be built adjacent to the Broad River which is one of the major river systems in South Carolina. The 7Q10 for the Broad River downstream of the facility at the Alston USGS gauge calculated in March 2007 is 853 cfs. The normal water use during normal operations of the facility, which is approximately 83 cfs, of which a portion is returned to the Broad River, represents less than 10% of the 7Q10 flow. (Tr. X, p. 2497, l. 8 – 12.) (The 7Q10 is a standard measurement representing low flow with a ten-year return frequency. In other words, it is the lowest stream flow for seven consecutive days that would be expected to occur once in ten years.) (Tr. X, p. 2497, l. 3 – 7.)

At the point where Units 2 and 3 will be built, the Broad River is impounded by SCE&G's Parr Reservoir. The Units themselves will not draw cooling water directly from Parr Reservoir, but from the Monticello Reservoir, a 6,800 acre lake connected to Parr Reservoir which serves as the reservoir for the Fairfield Pumped Storage facility that SCE&G constructed in the 1970s. When full, Monticello Reservoir holds 29,000 acre feet of usable water, which is enough water to meet the needs of Units 2 and 3 operating

at full capacity for approximately 2.5 months. (Tr. III, p. 552, l. 20 – p. 553, l. 4.) In addition, there are eight pumping turbines at the Fairfield Pumped Storage facility with a combined rating of 576 MW. These turbines can pump water up from the Parr Reservoir into Lake Monticello where it can be released to generate electricity or stored for use as cooling water for Units 2 and 3. The Fairfield Pumped Storage facility allows SCE&G to replenish Monticello Reservoir at any time that there is an adequate volume of water in the Broad River or the Parr Reservoir, even if that volume of water is available only for a short period of time. (*See generally*, Tr. III, p. 547, l. 9 - p. 553, l. 7.)

As indicated above, the record shows that the operation of Units 2 and 3 will require a modest amount of water compared to the amount of water available in the Broad River and Monticello Reservoir. Furthermore, the Jenkinsville site provides the Company with the unique ability to collect water in the Parr Reservoir and to use Fairfield Pumped Storage pumps to replenish Monticello Reservoir whenever conditions in Parr Reservoir and the Broad River permit. (Tr. III, p. 551, l. 21 – p. 553, l. 7.) As witnesses for both the Company and ORS testified, the water supplies available at the site of Units 2 and 3 are more than adequate to support reliable operations of Units 2 and 3. (*See Id.*; Tr. IV, p. 757, l. 18 – 25; Tr. VIII, p. 2152, l. 9 – 18; Tr. X, p. 2514, l. 18 – p. 2515, l. 4.)

b. Transmission

Mr. Wojcicki also contended that the location of Units 2 and 3 in Jenkinsville does not support the reliability of the system because of its distance from load centers in

coastal areas of SCE&G's service territory. However, as SCE&G's Manager of Transmission Planning, Mr. Young, testified SCE&G's largest load center is not located along the coast but in the central portion of South Carolina, where Units 2 and 3 will be located. If the units were located at the coast, new transmission lines connecting them to the load center in the central portion of the state would be required. Moreover, currently there are six SCE&G transmission lines and two Santee Cooper lines serving the site of Unit 1 and only four new SCE&G lines and two new Santee Cooper lines will be needed to move the additional power to be generated by Units 2 and 3. A coastal site would be a green field site and would require a full complement of six to ten new transmission lines to distribute the power generated to different areas of the system. (Tr. XII, p. 2793, l. 13 – 21.)

For these reasons, the decision to locate Units 2 and 3 in central South Carolina and not along the coast as advocated by Mr. Wojcicki is prudent and reasonable and does not impair the reliability of those Units to serve customer load from a transmission standpoint. Neither water supply nor transmission issues are likely to compromise the reliability of those units. Mr. Wojcicki's motion to require relocation is denied.

C. Nature of the Probable Environmental Impacts

The third finding and determination required by the Siting Act is a finding as to the "nature of the probable environmental impact" of Units 2 and 3. S.C. Code Ann. § 58-33-160(1)(b). As the record shows, Units 2 and 3 will be constructed on the site of an existing nuclear generating station whose environmental conditions have been closely

monitored for over 30 years. (Tr. X, p. 2479, l. 4 – 10; Hearing Exhibit 30, SJC-3.) In addition, the environmental conditions at the site have been evaluated in detail at least three times: in the initial NRC licensing of Unit 1, in the recent NRC license renewal for Unit 1, and in preparation of the environmental report that was provided to the NRC as part of the Company's Combined Operating License Application ("COLA") for Units 2 and 3. (Tr. X, p. 2479, l. 4 – 10; Tr. X, p. 2523, l. 12 – 20.)

Company Witnesses Steven Connor and Stephen Summer testified concerning the most recent environmental report and its conclusions. That report is over 1,100 pages long and represents the work of over 25 major contributors and over 25,000 hours of work by environmental experts and others. (Tr. X, p. 2417, l. 3 – 10.) The report examined a comprehensive list of possible environmental impacts of the plant and provided a detailed analysis of Site and Vicinity Land Use; Air Quality; Water Quality; Water Quantity and Use; Terrestrial Ecosystems; Aquatic Ecosystems; Threatened and Endangered Species; Historic and Cultural Resources; and Transportation. (Tr. X, p. 2431, l. 1.) The report specifically examined the likely radiological impacts of the plant and the provisions for the storage and disposal of low-level wastes and spent fuel assemblies. (*See generally*, Tr. X, pp. 2436 – 2446.)

The report concluded that the impact of the plant on each of the areas enumerated above would be "small," which is defined as environmental effects which are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource. (Tr. X, p. 2447, l. 14 – 15.) The only exception was

in the area of Transportation. The report concluded that the effect of the Units on traffic patterns in the vicinity of the Units would be small to large, with the greatest impact due to the increased road use in the area caused by construction traffic but would be moderate during the operation of the facility. (Tr. X, p. 2448, l. 1.) Moderate impacts are defined as environmental effects which are sufficient to alter noticeably, but not to destabilize any important attribute of the resource. (Tr. X, p. 2418, l. 16 – 18.) Large impacts are defined as environmental effects which are clearly noticeable and are sufficient to destabilize sufficient to alter noticeably, but not to destabilize any important attribute of the resource. SCE&G had indicated that it will work with DOT to mitigate the impact that traffic and transportation activities will have on the area.

ORS Witness Crisp testified concerning ORS's review and audit of this environmental information. (Tr. VII, p. 1916, l. 4 – p. 1919, l. 15.) ORS witness Crisp testified that SCE&G had fulfilled its obligation for filing its environmental report with the NRC and had established a protocol to address the necessary permitting from state and federal agencies to protect the South Carolina environment, and he supported the conclusion that the environmental effects of the plant would be as set forth in that report. (Tr. VIII, p. 1919, l. 8 – 15.)

At the hearing, FOE contended that the analysis did not properly account for the environmental concerns related to the long-term disposal of spent fuel from the facility. The record, however, shows that the facility has capacity in its spent fuel storage pool to store the spent fuel assemblies generated by 18 years of operations. (Tr. III, p. 613, l. 7 -

10.) In addition, the Company plans to construct a dry cask storage facility in the near future to store spent fuel from Unit 1. (Tr. III, p. 613, l. 10 – 13.) The facility would with be designed to accommodate or to be expanded to accommodate spent fuel from Units 2 and 3 when their spent fuel pools are filled. (Tr. III, p. 613, l. 13 – 16.)

As the record indicates, dry cask storage is a means to store spent fuel assemblies which have been held in the spent fuel pool for five years or more to allow the radioactivity levels in them to decay to acceptable levels. These fuel assemblies are placed into heavy stainless steel containers that are welded shut and placed into a concrete overpack which is also sealed. (Tr. III, p. 614, l. 2 – 10.) The resulting cask can then be stored for an indefinite period either on a pad above ground or below ground in a shallow concrete silo. (Tr. III, p. 614, l. 8 – 10.) Other than fencing and site security, the casks require no maintenance or upkeep and do not emit levels of radiation that require special precautions. (Hearing Exhibit 30, SJC-3.) Within the casks, radiation levels continue to degrade as the assemblies are stored. (Tr. III, p. 614, l. 2 – 10.)

Dry casks provide long-term storage for spent fuel assemblies but do not constitute permanent repositories for them. However, as the Company points out, the long-term disposal of spent fuel assemblies is a statutory responsibility of the Federal Government. *See* the Nuclear Waste Policy Act of 1982, 42 U.S.C. § 10101 *et seq.*, 42 U.S.C. 10131(b)(1), 10 C.F.R. §961.11. As the record indicates, the U.S. Department of Energy must enter into an agreement to take ultimate responsibility for the fuel as a condition of the NRC issuing a license for the Units. (Tr. X, p. 2460, l. 16 - 19.) As the record also

indicates, the Federal Department of Energy is proceeding with licensing of the Yucca Mountain repository as a long-term site for such fuel assemblies. (Tr. IV, p. 740, l. 5.) The license application for the facility has recently been submitted to the NRC.

For the Commission to find that long term disposal of spent fuel assemblies constitutes a negative environmental impact of Units 2 and 3, it would have to conclude that the Federal Government cannot or will not meet its statutory responsibilities. There is no evidence on the record indicating that the Federal Government intends to renounce its responsibility to provide a long term repository for this spent fuel that is safe and environmentally secure. Accordingly, there is no basis in this record to determine that long-term disposal of spent fuel assemblies constitutes an environmental problem that might prohibit the Commission issuing a Siting Act certificate for Units 2 and 3.

Similarly, FOE challenged the environmental record of the Barnwell low-level nuclear waste disposal facility as posing a potential environmental problem with the siting of Units 2 and 3. The Barnwell facility accepts low-level waste only from generators in South Carolina, New Jersey and Connecticut. (Tr. IV, p. 750, l. 12 – p. 751, l. 9.) Additional facilities exist in other states, and new facilities are being permitted at this time. (Tr. IV, p. 751, l. 20 – 21; Tr. X, p. 2440, l. 16 – 19.) The Barnwell facility is extensively regulated by the State Department of Health and Environmental Control. (See S.C. Code Ann. § 13-7-40 *et seq.*; S.C. Regs 61-63.) The purpose of that regulation is to ensure that this facility complies with applicable environmental regulations such that its activities do not result in injury to the environment of the State of South Carolina.

There is no basis on this record for the Commission to find that its sister agency will not fulfill its legal duties, or that the potential use of the Barnwell facility constitutes a negative environmental impact of building Units 2 and 3 that might prevent those units being approved by this Commission under the Siting Act.

D. Justification of the Impact on the Environment

The fourth finding and determination required by the Siting Act is whether “the impact of the proposed facility is justified considering the state of available technology and the nature and economics of the various alternatives and other pertinent considerations.” S.C. Code Ann. § 58-33-160(1)(c). The environmental report concluded that wind, solar, biomass and hydro generation were not feasible alternatives to nuclear or fossil fired generation. As to solar and wind generation, the environmental report concluded that these energy sources would have greater environmental impacts than nuclear given the amount of area that would need to be dedicated to them and the new transmission facilities they would require. (Tr. X, p. 2450, l. 5 – 8.) For purposes of the environmental assessment, coal and gas generation were identified as the principal alternatives to nuclear generation. Both coal and gas alternatives were found to have significantly greater environmental impacts than Units 2 and 3, due principally to significantly higher air emissions, specifically the amount of additional CO₂, nitrous oxides, SO₂ and particulates that would be emitted by either gas or coal generation. (Hearing Exhibit 30, SJC-3.) The environmental report concluded that from an environmental standpoint, nuclear generation was the best alternative for meeting the

energy needs of SCE&G's customers with the least impacts on the environment. (Tr. X, p. 2450, l. 13 – 15.) The Commission finds that this conclusion is amply supported on the record.

E. Reasonable Assurance that the Facilities Can Comply with Applicable State and Local Laws

The fifth finding required by the Siting Act is whether “there is reasonable assurance that the proposed facility will conform to applicable State and local laws and regulations.” S.C. Code Ann. § 58-33-160 (1) (e). Hearing Exhibit 2 contains a list of the 19 major permits, apart from NRC permits, required to construct and operate Units 2 and 3. (Hearing Exhibit 2, SAB-7, p. 1 – 3.) Three of the 19 major permits are Federal permits exclusively: a Federal Energy Regulatory Commission permit for work on Monticello Reservoir, a Corps of Engineers wetlands permits for site work, and a Federal Aviation Commission permit for construction cranes to be erected on site. The remaining 16 permits are state permits or joint state-federal permits administered by the State. (Hearing Exhibit 31, SES-1, p. 1 – 3.) The record reflects that, so long as SCE&G obtains these 16 permits and operates according to their terms, the construction and operations of Units 2 and 3 will be in compliance with all state and local laws. (Tr. X, p. 2428, l. 11 – p. 2429, l. 10.)

Company Witness Byrne testified that in his opinion and in the opinion of the members of his new nuclear deployment team, all of these permits could be obtained in a timely fashion and that Units 2 and 3 could be operated in compliance with all applicable laws and regulations, both State and Federal. (Tr. III, p. 610, l. 9 – 16.) Mr. Byrne's

testimony on this point was not contradicted by any party. Accordingly, the record supports the finding that Units 2 and 3 can be built and operated in compliance with all applicable State and local laws and regulations as the Siting Act requires.

F. Public Convenience and Necessity

The sixth and final finding required by the Siting Act is whether “public convenience and necessity require the construction” of the proposed facilities. S.C. Code Ann. § 58-33-160(1)(f). The Commission construes this provision of the statute as requiring a finding that integrates into a single determination all aspects of the public interest evaluation related to the plant. In this case, the record demonstrates that Units 2 and 3 represents capacity that is needed to supply reasonably forecasted customer demands. In addition, the size, type, location and technology of the Units are the preferable means of doing so with the greatest economy and reliability and with the least impact on the environment.

As discussed above, the principal benefits of nuclear generation, in addition to lower forecasted costs, is the fact that it helps insulate customers from the price volatility and supply risk that are increasingly associated with fossil fuel fired generation. Nuclear generation also insulates customers from future CO₂ and other environmental compliance costs associated with fossil fuels, which are likely to be significant. Alternative energy sources may provide useful supplemental energy for SCE&G’s system going forward. However, the cost competitiveness, availability and reliability of alternative energy sources are subject to significant questions and concerns at this time. Public convenience

and necessity would not be supported by forcing SCE&G's customers to rely on the future availability and cost competitiveness of these energy sources as a substitute for SCE&G constructing additional base load capacity at this time.

The risks related to nuclear construction, and the steps that SCE&G has taken to mitigate them, are discussed extensively in the record. The Company's plans to manage licensing risks and delays and to oversee construction through its own personnel and processes are also discussed more fully below. The record shows that the Company has carefully evaluated the risks related to nuclear construction and operations and compared them to the risks and costs of other alternatives. The Commission agrees with this assessment and finds that the public convenience and necessity support the construction of Units 2 and 3 as proposed by SCE&G.

IV. BASE LOAD REVIEW ACT FINDINGS

The Base Load Review Act requires the Commission to go beyond the public convenience and necessity findings required under the Siting Act and to conduct a full pre-construction prudency review of the proposed Units and the EPC Contract under which they will be built. The Commission must also set out construction schedules and annual capital cost schedules which will establish the prudency and reasonableness of plant capital costs if such schedules are met.

A. The Prudence and Reasonableness of the Decision to Proceed with Construction of Units 2 and 3

The first finding that the Commission is required to make under the Base Load Review Act is whether “the utility’s decision to proceed with construction of the plant is prudent and reasonable given the information available to the utility at the time.” S.C. Code Ann. 58-33-270(a)(1). The act also requires related findings concerning the “choice of the specific type of unit or units and the major components of the plant” as well as “the qualification and selection of the principal contractors and suppliers for the plant.” S.C. Code Ann. 58-33-270(b)(4), (5). These findings are the heart of the pre-construction prudency review envisioned by the Base Load Review Act. They require the Commission to make a comprehensive assessment of the decision to build the plant to determine if that decision is reasonable and prudent based on all available information.

In addition to the Siting Act findings listed above, matters bearing on the Commission’s prudency findings under the Base Load Review Act include: a) the selection of the Jenkinsville site for Units 2 and 3; b) the selection of AP1000 technology as the appropriate reactor technology for this project; c) the related decision to select Westinghouse Electric Corporation, LLC and Stone & Webster, Inc. as the nuclear system supplier and construction contractor, respectively; d) the selection of other major contractors for the project; e) the structure and terms of the EPC Contract; f) the price at which the plant is being constructed; and g) the Company’s ability to execute its financing plan for construction of the Units. Each of these matters is considered below.

1. The Selection of the Jenkinsville Site

The record shows that the Jenkinsville site was selected for Units 2 and 3 based on a series of four site evaluation studies conducted over 34 years. (Hearing Exhibit 2, SAB-1, p. 5.) These studies consistently identified the Jenkinsville site as being among the most suitable of the sites on SCE&G's system for the construction of a new base load generating unit. (*Id.*; Tr. III, p. 548, l. 6 – p. 551, l. 9.)

The record shows that SCE&G selected the Jenkinsville site as the site for Units 2 and 3 for a number of appropriate reasons. The site is near SCE&G's principal load centers and is already served by extensive existing transmission infrastructure. (Tr. III, p. 653, l. 24 – p. 654, l. 2.) It is located on land that SCE&G owns and has operated as a nuclear generation site for decades. (Tr. III, p. 548, l. 6 – p. 551, l. 9.) Nuclear security, nuclear operations support, and nuclear training and administrative facilities are already in place on the site, along with rail transportation infrastructure necessary to support construction and operation of the new units. *Id.* The site has a superior water supply and superior geological and seismic suitability for use as a nuclear construction site. (Tr. III, p. 550, l. 20 – 21.) Because the site has supported successful nuclear operations for over 34 years, its geological and environmental features have been extensively studied, monitored and analyzed for an extended period of time. (Tr. III, p. 548, l. 6 – p. 551, l. 9.)

The ORS audited and evaluated the site selection process and criteria as well as the decision to select the Jenkinsville site. ORS Witness Crisp testified that the

Jenkinsville site was particularly appropriate because the foundation at the proposed site is composed of bedrock as opposed to a coastal marl. A coastal plain site would significantly increase the cost of the project. (Tr. VIII, p. 2159, l. 1 – 6.) In addition, issues regarding potential wetlands, the necessity for obtaining transmission right of ways and related environmental and property issues strongly favor the placement of this project at the Jenkinsville site. (Tr. VIII, p. 2159, l. 6 – 19.)

Specific concerns were raised at the hearing concerning the seismic suitability of the site. In response, Company Witness Whorton, who was involved in the original geological work to license Unit 1, reviewed the detailed geological investigations of the site that have been conducted over more than 25 years. As Mr. Whorton testified, the geology of the site was extensively studied during the licensing and the construction of Unit 1. It was then subject to subsequent seismic reassessments by the NRC after Unit 1 went into operation and then again during the license extension evaluation for Unit 1. Further geological investigation and seismic evaluation was done in preparation of the NRC license application for Units 2 and 3.

Mr. Whorton testified that the seismic design of the AP1000 unit is more than sufficient to withstand the postulated design basis seismic event for the Jenkinsville site, including a recurrence of the largest recorded earthquake in the Southeastern Piedmont Province (the Union County earthquake of January 1, 1913) occurring at the plant. (Tr. X, p. 2533, l. 3 – 5.) Mr. Whorton also testified that nuclear plants are designed with significant margins of seismic safety. (Tr. X, p. 2528, l. 8 – 18.) Several Japanese

nuclear units which were designed to approximately the same seismic standards as Unit 2 and 3 recently survived an earthquake of substantially higher magnitude than the design basis event for the Jenkinsville site, with no damage to plant safety functions. (Tr. X, p. 2639, l. 1 – 21.) The record clearly establishes the suitability of the site from a seismic perspective. (Tr. X, p. 1957, l. 14 – 17.)

Based on the testimony of Mr. Whorton, the Commission finds that the record clearly supports the prudence and reasonableness of the selection of the Jenkinsville site as the location for Units 2 and 3.

2. The Selection of AP1000 Technology

The record shows that SCE&G selected AP1000 technology based on a comparative evaluation of the three leading nuclear reactor designs that are commercially available today. These three designs represent all but a small number of the nuclear generating units under consideration for siting in the United States at this time. (Tr. III, p. 562, l. 3 – p. 563, l. 5.) In 2005, SCE&G asked each of the three vendors of these designs to submit written responses to more than 400 technical and financial questions concerning its unit. SCE&G then used objective weighing criteria to evaluate and compare their responses. The evaluation of the technical and financial responses was made independently by separate groups within the Company. (Tr. III, p. 564, l. 6 – 12.) AP1000 technology was selected as preferable by both groups of evaluators. (Tr. III, p. 564, l. 4 – 8.)

In late 2006, SCE&G began a reevaluation of these vendors based on updated information concerning the status and pricing of their designs. The reevaluation was completed in March of 2007. SCE&G's financial evaluation of these competing designs showed that the AP1000 unit was competitive with or preferable to the two alternative designs from both a pure cost per megawatt basis and from a size, design, operational, and engineering perspective. (Tr. III, p. 564, l. 14 – 565, l. 1 - 3.)

From the perspective of size, the AP1000 unit at 1,117 MW allows SCE&G to site two units at the Jenkinsville site. (Tr. III, p. 566, l. 12 – 13.) The competing vendors' units are 1,550 MW and 1,600 MW in size. For transmission and other reasons, SCE&G determined that it would not be practical and cost effective to site two units of such larger size on the site. The selection of AP1000 units, however, allows a total of 2,234 MW of new generation capacity to be sited at Jenkinsville, which results in better utilization of that site and its existing infrastructure. (Tr. III, p. 566, l. 18 – 21.)

In addition, a single unit would have a single completion date, while constructing two 1,117 MW units gives SCE&G the ability to bring new capacity on line in two installments separated by approximately three years. Phasing the additional capacity allows the capacity additions to be more precisely timed to demand growth on the system. In addition, two 1,117 MW units are preferable from an operational standpoint to a single larger unit because two units allow more flexibility in outage scheduling and result in less power lost to the system if a unit trips off, thereby enhancing system reliability. (Tr. III, p. 566, l. 12 – 18.)

As to design suitability, the AP1000 unit was the only one of the three units evaluated that is a pressurized water reactor with passive safety features. The other units were either pressurized water units or passive safety units, but not both.

The pressurized water design was important to SCE&G because that is the type of unit SCE&G currently operates very successfully as Unit 1. Units 2 and 3 will share many of the same components, design features, and operating characteristics as Unit 1. These similarities will make staffing, training, operating and maintaining the Units much simpler than if a different technology had been selected. (Tr. III, p. 572, l. 5 - 10; Tr. III, p. 567, l. 3 – 7.)

Passive safety design is also important because it dramatically reduces the amount of safety related equipment – including valves, pumps and piping – that is included in the plant's design. Less safety related equipment greatly simplifies operation and maintenance of the Units and NRC regulatory compliance issues. None of the competing units had both features. (Tr. III, p. 572, l. 5 – 22.)

The Company also selected the AP1000 unit because at the time of selection it was the only one of the competing units that was fully design-certified by the NRC. The AP1000's nuclear safety systems received NRC staff approval in 2004, and full NRC design certification was granted thereafter. Furthermore, the AP1000 design is a similar but enhanced version of the AP600 design which the NRC design-certified in 1999. (Tr. III, p. 555, l. 10 – 11; Hearing Exhibit 2, SAB-1, p. 3.)

Finally, the AP1000 presents superior opportunities for collaboration among Southeastern utilities. At the time of the hearing, fourteen AP1000 units were being proposed for construction by six separate utilities in the Southeast. This number of AP1000 units increases the opportunity for cost and experience sharing among these utilities, both during construction and operation of the Units. The record shows that utilities are cooperating extensively in this regard. The fact that SCE&G's units will be among the first of the 14 such units to be built in the region means that Westinghouse and Stone & Webster will have every incentive to complete these initial units efficiently and on schedule, and that vendors will be eager to be selected and retained as part of the supply chain for this extensive series of plants. The fact that so many other utilities have selected the AP1000 unit is further evidence of the strength of the design and competitiveness against alternative resources. (Tr. III, p. 570, l. 13 – p. 571, l. 5; Tr. III, p. 573, l. 3 – 17.)

The ORS has extensively audited the Company's decision to select AP1000 units for construction at the Jenkinsville site. (*See generally*, Tr. VIII, p. 2020 – 2026.) ORS's independent expert witnesses testified without reservation in support of the reasonableness and prudence of this selection. (Tr. VIII, p. 2025, l. 15 – 23.) The Company and ORS have provided the Commission with an extensive and thorough record in regards to the appropriateness of this technology and the reasonableness of the selection process. After review of that record, the Commission finds that SCE&G's selection of the AP1000 units as Units 2 and 3 was prudent and reasonable.

3. The Qualification and Selection of Principal Contractors and Suppliers

The Base Load Review Act requires the Commission to make a finding concerning the prudence and reasonableness of the selection of the principal contractors and suppliers for the construction of the plant, as well as their qualifications to perform the work. S.C. Code § 58-33-270(B)(5). Units 2 and 3 will be built by Westinghouse Electric Co., LLC, as the principal nuclear systems supplier, and Stone & Webster, Inc. as the principal contractor. These two companies have formed a consortium that is the signatory for the EPC Contract to build the plant. In addition, the EPC Contract between the Company and Westinghouse/Stone & Webster provides a list of qualified suppliers approved by the Company from which Westinghouse/Stone & Webster can select the principal contractors and suppliers for this project. (Tr. III, p. 579, p. 5 – 10; p. 585, l. 18 – 22; Hearing Exhibit 2, SAB-4, p. 3 – 10.)

a. Westinghouse/Stone & Webster

The record shows that the selection of Westinghouse and Stone & Webster to construct Units 2 and 3 is reasonable and prudent and that they are well qualified for the work. Westinghouse is recognized worldwide as a major supplier of nuclear technology and has been involved in nuclear power technology since the inception of the industry. (Tr. VIII, p. 2029, l. 11 – 14.) In the 1950s, Westinghouse built both the first military and the first commercial nuclear power plants. (Tr. VIII, p. 2027, l. 7 – 18.) Westinghouse has been involved with the Company and the V.C. Summer site for over forty-four years. It designed the Parr demonstration nuclear plant which was constructed

adjacent to the V.C. Summer site in the early 1960's. (Tr. VIII, p. 2028, l. 22 – p. 2029, l. 1.) Westinghouse also designed and built Unit 1, which went into commercial operation in January 1984. (Tr. VIII, p. 2029, l. 1 – 2.)

Currently, almost 60% of the United States' operating reactors are based on Westinghouse designs. (Tr. VIII, p. 2028, l. 2 – 3.) Westinghouse has also provided the design basis for almost 50% of the world's operating commercial nuclear power plants. (Tr. VIII, p. 2027, l. 11 – 13.) As mentioned above, the Westinghouse AP1000 design has been selected for 14 new nuclear units proposed to be built in the United States at this time. Westinghouse is clearly poised to continue to maintain a strong position in the industry and is fully qualified to be the supplier of nuclear systems to this project.

The construction contractor, Stone & Webster, is a 110-year old company that has been involved with design, construction and maintenance of nuclear power plants since 1957. It is currently a wholly owned subsidiary of The Shaw Group (Tr. VIII, p. 2029, l. 5 – 14.) Stone & Webster has recently been employed in the construction of a mixed-oxide fuel (MOx) facility at the Savannah River site and in the completion of construction of TVA's Brown's Ferry Plant. (Tr. III, p. 583, l. 19 – p. 584, l. 1.) Both Westinghouse and Stone & Webster are currently involved in construction of AP1000 reactors in China, two in Sanmen, China and two more in Haiyang, Shandong Province, China. (Tr. VIII, p. 2028, l. 13 – 15.) Westinghouse/Stone & Webster consortium has been contracted by the Southern Company to construct two new AP1000 units at Plant

Vogtle in Georgia, and is in contract negotiations with Duke Power, Progress Energy and TVA for the construction of multiple units on their behalf.

One of the key considerations regarding a nuclear supplier is the strength of the corporate quality assurance program that will be employed to meet applicable NRC requirements and to ensure that the plant can be built and operated in a reliable and dependable manner. (Tr. III, p. 583, l. 5 – p. 584, l. 5.) Westinghouse has a long-standing relationship with SCE&G involving maintenance and improvements to its existing nuclear and fossil facilities. SCE&G's witnesses testified to their familiarity and experience with the Westinghouse quality assurance program and their review and evaluation of the comparable program run by Stone & Webster. The Company's witnesses testified that these quality assurance programs are fully adequate to protect the Company's interests in the quality of the equipment, components and construction of Units 2 and 3. (Tr. III, p. 584, l. 3 - 5.)

Based upon the foregoing, the Commission finds that the selection of Westinghouse/Stone & Webster as the suppliers and contractors for Units 2 and 3 is reasonable and prudent.

b. Other Vendors

The EPC Contract between SCE&G and the Westinghouse/Stone & Webster consortium requires all subcontractors and suppliers be selected from a list of prescreened/preapproved vendors. (Hearing Exhibit 2, SAB-4, p. 1 - 2.) All suppliers performing nuclear safety related work will be required to comply with the consortium's

quality assurance program. (Hearing Exhibit 2, SAB-4, p. 1.) The consortium's Project Quality Assurance Program is an exhaustive process of evaluation and approval of all suppliers of safety-related products and services. The suppliers, including those that carry the ASME nuclear accreditation, are evaluated annually and audited every three years, including suppliers that carry the ASME nuclear certification. (Tr. VIII, p. 1901, l. 11 – 14.) The criteria to qualify potential suppliers for use in supplying components for the AP1000 under the quality assurance program include: the supplier being listed on the consortium's qualified suppliers list, the supplier having a standing relationship with the consortium for the supply of the specific type of component, and the supplier having a proven track record of successfully supplying quality components to the nuclear industry. (Hearing Exhibit 2, SAB-4, p. 1.) Once a vendor satisfies these criteria, the consortium conducts an on-site audit to perform an assessment of the potential supplier's facilities, capabilities, and programs. (Hearing Exhibit 2, SAB-4, p. 1.) All qualified suppliers are thereafter evaluated annually and audited, except under special circumstances, every three years. (Hearing Exhibit 2, SAB-4, p. 1.) A list of potential suppliers and vendors for the Units 2 and 3 was included as Exhibit P to the EPC.

In addition to the consortium's review and audit processes, SCE&G has evaluated the suppliers and subcontractors identified in Exhibit P to the EPC and the consortium's quality assurance programs under which they will operate. (Tr. III, p. 587, l. 8 – 11; Hearing Exhibit 2, SAB-3, p. 1.) Many of these subcontractors and vendors have been

known by the Company for decades and have worked with the Company successfully in operating Unit 1 and other electric generating stations. (Tr. III, p. 587, l. 11 – 15.)

In addition, SCE&G has contracted with the Bechtel Corporation to serve as the lead contractor in preparing the site-specific COLA for Units 2 and 3 and in assisting SCE&G in obtaining the required license from the NRC. As Company Witness Byrne testified, Bechtel is one of the most experienced and well-recognized firms internationally in power systems construction, engineering and consulting services. (Tr. III, p. 604, l. 9 – 11.) SCE&G has extensive knowledge of Bechtel Corporation both from past projects and from Bechtel's standing and involvement in the nuclear power industry. (Tr. III, p. 604, l. 11 – 14.) According to Mr. Byrne, the NRC has already completed its sufficiency review of the COLA prepared by Bechtel for Units 2 and 3, and has declared the COLA sufficient and available for review and comment. Mr. Byrne testified that SCE&G has been fully satisfied by the thoroughness, professionalism and competency of the work that Bechtel and its subcontractors have done to date and that Bechtel is capable of seeing the application through to its conclusion. (Tr. III, p. 604, l. 14 – 17.) The Commission finds that Bechtel and its subcontractors are well qualified to assist the Company in obtaining a license for the new Units.

Based on the foregoing, the Commission finds that the contractors and vendors, including those provided for in the EPC and otherwise, are competent and reliable to perform as subcontractors and vendors to the project and that their selection and

qualifications were reasonable and prudent and fully satisfies the requirements of the Base Load Review Act.

4. The Terms of the EPC Contract

A key component of the prudency review envisioned by the Base Load Review Act is a review of the reasonableness and prudence of the contract under which the new units will be built. Units 2 and 3 will be constructed pursuant to the terms of an EPC Contract which SCE&G negotiated with Westinghouse/Stone & Webster over a two and a half-year period. Under that contract, SCE&G is responsible for providing the construction site and specified construction utilities, and for obtaining permits and licenses needed to build and operate the Units. (Tr. III, p. 580, l. 12 – 14.) Westinghouse/Stone & Webster is responsible for other aspects of designing, engineering and constructing the Units. (Tr. III, p. 579, l. 13 – 16; Tr. III, p. 579, l. 21 – p. 580, l. 3.) Both a confidential and non-confidential version of the EPC Contract have been filed in the record of this proceeding as Exhibit C to Mr. Byrne's testimony. (Hearing Exhibit 2, SAB-3.)

a. Pricing Terms

The pricing under the EPC Contract divides the Westinghouse/Stone & Webster charges into seven specific categories. Each of those categories has distinct pricing terms that apply to those aspects of the work that fall within them.

- The Fixed with No Adjustment category includes some major plant components necessary to construct the Units. The price for these items is fixed

in absolute dollars and no inflation adjustment or escalation rate applies to them. (Tr. III, p. 589, l. 5 - 11.)

- The Firm with Fixed Adjustment A category includes other items of major equipment for the plant. The price for this equipment is fixed in 2007 dollars. That price is subject to escalation based on a specified annual percentage rate that is established in the contract. (Tr. III, p. 589, l. 12 – 20.)
- The Firm with Fixed Adjustment B category includes specialized nuclear-specific labor, systems and material charges that will be incurred by Westinghouse Electric Corporation directly in designing and constructing the Units. The price for this work is fixed in 2007 dollars and is subject to escalation based on a specified annual percentage rate that is slightly higher than the rate for Firm with Fixed Adjustment A category. (Tr. III, p. 589, l. 21 – p.590, l. 9.)
- The Actual Craft Wages category includes all site craft labor, which is skilled construction labor such as welders, pipe fitters, riggers, and concrete finishers. These labor costs are charged at Westinghouse/Stone & Webster's actual cost at the time they are incurred. (Tr. III, p. 590, l. 19 – 21.)
- The Non-Labor Target category includes costs of construction material and supplies as well as the cost of ancillary buildings such as warehouses. These costs are charged based on Westinghouse/Stone & Webster's actual cost at the time they are incurred. (Tr. III, p. 591, l. 1 – 5.)

- The Time and Materials category includes charges for the time and materials supplied by Westinghouse/Stone & Webster in support of SCE&G's obtaining required licenses and permits for the Units, and testing and start-up of the Units. These costs are charged based on Westinghouse/Stone & Webster's actual cost at the time they are incurred. No escalation rate is specified in the EPC Contract. (Tr. III, p. 591, l. 6 – 10.)
- The Firm with Indexed Adjustment category includes all items not included in other categories. Specifically, it includes such things as non-craft labor and ancillary costs of the construction project such as insurance. For charges that fall within this cost category, the underlying price in 2007 dollars is fixed, but the price is subject to escalation based on the Handy-Whitman All Steam South Atlantic Region escalator as it is updated year to year. (TR. III, p. 590, l. 10 – 18.)

Of these seven price categories, four are categories for which prices are fixed in absolute dollars, or are quoted in firm 2007 dollars with a stated escalation rate or specified inflation index. In these "fixed and firm" categories, SCE&G remains at risk for scope additions and change orders. Otherwise, substantially all of the non-inflation price risk is assumed by Westinghouse/Stone & Webster. (Hearing Exhibit 2, SAB-3, p. 3.)

The Target Price categories include Actual Craft Wages and Non-Labor Target. The EPC Contract sets a Target Price for these cost categories in 2007 dollars subject

only to indexed inflation and to scope changes and change orders. If Westinghouse/Stone & Webster exceeds the Price Target, then it is at risk for a contractually determined portion of its profits on the excess work. (Tr. II, p. 179, l. 3 – 6.) If the work comes in under the Target Price, then Westinghouse/Stone & Webster are allowed to keep a majority of the savings. (Tr. II, p. 179, l. 6 – 8.) This combination of potential incentives and penalties provides Westinghouse/Stone & Webster with a strong motivation to complete the project at or below the Target Price.

The Time and Materials category is the only EPC cost category that is outside both the fixed and firm category and the target price category. It represents the cost of assistance that Westinghouse/Stone & Webster will provide to SCE&G in licensing, permitting and testing the Units and is a small component of the total price. (Tr.III, p. 592, l. 18 – p. 594, l. 11.)

A number of intervenors have raised questions concerning the degree of price certainty provided by the EPC Contract. In their testimony, SCE&G Witnesses Byrne and Marsh testified that in the EPC Contract negotiations, the Company sought to obtain the greatest degree of price assurance possible, with due consideration to the cost that Westinghouse/Stone & Webster's would charge for accepting additional price risk. (Tr. II, p. 178, l. 15 – p. 179, l. 9.) A review of the EPC Contract's pricing terms indicates that in excess of 50% of the total EPC price falls into fixed or firm categories. (Tr. III, p. 592, l. 5 – 7.) More specifically, these fixed and firm categories contain the major equipment and components that are to be used in the Units, and the majority of nuclear-

specific engineering and other services that will be provided by Westinghouse as the nuclear systems provider. (Tr. VIII, p. 2032, l. 1 – p. 2033, l. 5.) Westinghouse/Stone & Webster was able to provide fixed or firm pricing not only on the majority of the total price, but also on the majority of those elements of the equipment and services that were most uniquely nuclear in nature, and so subject to potential price risks that are unique as compared to more standard construction cost items. The Target Pricing provisions, quoted above, provide additional incentives to hold prices on other parts of the contract to anticipated levels. For these reasons, the Commission finds that the EPC Contract contains reasonable and prudent pricing provisions, as well as reasonable assurances of price certainty for a project of this scope.

b. Quality Assurance Terms

An important set of provisions in the EPC Contract are the terms related to ongoing quality control and quality assurance during the course of the project. The EPC Contract requires timely financial and status reporting by Westinghouse/Stone & Webster during the course of the project. SCE&G has the right to inspect all work, including fabrication conducted off-site by Westinghouse/Stone & Webster and in suppliers' and vendors' facilities. (Tr. VIII, p. 1901, l. 22 – p. 1902, l. 3.) SCE&G has the right to block any new vendors from being added to this list that do not meet its approval. (Tr. III, p. 586, l. 4 – 7.)

SCE&G has clear contractually-defined rights to access and inspect contractors' and subcontractors' facilities, and to audit their quality assurance programs and

manufacturing techniques. (Tr. III, p. 586, l. 13 – 18.) The EPC Contract has specified witness points and hold points at which SCE&G personnel have the right to be present when certain key manufacturing processes take place, and to inspect the quality of partially completed equipment and components at designated stages of their production. (Tr. III, p. 586, l. 18 – 21.) SCE&G may designate additional witness and hold points at its expense. (Hearing Exhibit 2, SAB-3.) SCE&G has the right to reject work, equipment and components, the right to issue “stop work” orders to allow time to resolve questions concerning quality deficiencies, and the right to require contractors or subcontractors to change manufacturing processes to correct quality deficiencies. (Tr. VIII, p. 1902, l. 20 – 23.) The EPC includes detailed requirements for subcontractor quality assurance, reporting of defects and noncompliance to SCE&G and Westinghouse/Stone & Webster, quality control and inspection activities by SCE&G and Westinghouse/Stone & Webster to ensure performance, access and auditing of quality control by SCE&G at Westinghouse/Stone & Webster facilities and subcontractor facilities. (Tr. III, p. 586, l. 13 – 18.; Tr. VIII, p. 1902, l. 18 – 20.)

The record shows that the EPC Contract contains provisions that are reasonable and prudent and allow SCE&G to protect its interest and the interests of its customers in the quality of the work done to construct Units 2 and 3.

c. Other Provisions of the EPC Contract

The EPC Contract sets definitive substantial completion deadlines for Units 2 and 3 of April 1, 2016 and January 1, 2019 respectively. Westinghouse/Stone & Webster

must pay liquidated damages in material amounts if completion is delayed. (Tr. III, p. 598, l. 10 – 16.)

As to warranties, the EPC Contract contains warranties on materials, work and equipment which begin to run from substantial completion of each Unit or from the date that the equipment or component is placed into service if SCE&G places it into service before substantial completion of the Unit. (Tr. III, p. 599, l. 15 – p. 600, l. 9; Hearing Exhibit 2, SAB 3.) The EPC Contract contains provisions for SCE&G to purchase extended warranties on equipment at prices to be offered by Westinghouse/Stone & Webster. (Tr. III, p. 600, l. 6 – 9.) The EPC Contract contains clear capacity targets for the Units 2 and 3, with liquidated damages if they are not met, and bonus payments if the plants demonstrate that they can reliably generate more power than specified in the EPC Contract. (Tr. III, p. 598, l. 10 – 16; Tr. III, p. 599, l. 1 – 6.) The EPC Contract contains clear processes and procedures for measuring compliance of the Units with capacity targets and guarantees. (Tr. III, p. 598, l. 20 – p. 599, l. 6; Tr. III, p. 599, l. 17 – p. 600, l. 9.)

As to change orders, the EPC Contract contains clear definitions of the sorts of conditions that entitle the contractors to change orders and associated price adjustments. (Tr. III, p. 594, l. 17 – p. 595, l. 1.) These provisions are contained in Article 9 of the EPC Contract. These provisions specify in detail the sort of information required to be submitted with a change order, the requirement for review and agreement by Westinghouse/Stone & Webster and SCE&G to change orders, the payment and schedule

impacts of change orders and the handling of disputes as to change orders. (Tr. III, p. 595, l. 3 – 8.) Mr. Byrne testified that these change order provisions are reasonable and reflect standard practice in the industry and provide appropriate protection for SCE&G and its customers. (Tr. III, p. 595, l. 9 - 10.)

The EPC Contract contains parental guarantee provisions under which the parents of both Westinghouse (Toshiba, Corp.) and Stone & Webster (The Shaw Group) agree to stand behind the obligations of their subsidiaries up to certain defined amounts. (Hearing Exhibit 2, SAB-3.) It includes rights for SCE&G to terminate work under the contract during the construction process. (Tr. III, p. 669, l. 7 – 17.) In addition, it addresses such matters as Insurance; Limitation of Liability; Liens; Proprietary Data; Intellectual Property; Environmental Controls and Hazardous Materials; Title and Risk of Loss; Suspension and Termination of Work; Safety - Incident Reporting; Qualifications and Protection of Assigned Personnel (including provisions for fitness for duty and security screening; training to environmental, OSHA, NRC and other applicable Laws, NRC Whistleblower Provision and respirator protection); Records and Audits; Taxes; Dispute Resolution; Notices; Assignment; Waiver; Modification; Survival; Transfer; Governing Law - Waiver of Jury Trial - Certain Federal Laws; Relationship of Owner (SCE&G) and Contractor (Westinghouse/Stone & Webster); Third Party Beneficiaries; Representations and Warranties; and Miscellaneous Provisions. (Tr. III, p. 600 l. 12 – p. 601, l. 5.)

ORS experts conducted an extensive review of the EPC Contract and testified, as did Mr. Byrne, that its terms are reasonable and appropriate, consistent with industry

standards, and reasonably protect SCE&G's and its customers' interests. (Tr. VIII, p. 1898, l. 6 – 20.) The evidence of record supports the conclusion that the terms of the EPC Contract are reasonable and prudent.

5. The Price of Units 2 and 3

The Combined Application, at Exhibit F, set out the estimated cost of Units 2 and 3 as \$6,313,376,000 in escalated dollars. (Hearing Exhibit 16, EEB-1.) Of this amount, \$1,514,340,000 represents escalations and inflation resulting in an unescalated cost of \$4,799,036,000. (*Id.* at p. 3). Included in that amount is \$264,289,000 of capitalized interest in the form of AFUDC. (*Id.*) Accordingly, the estimated construction cost of the project in 2007 dollars is \$4,534,747,000 (or \$3,693 per KW), net of AFUDC. This amount includes owner's costs and contingency of \$876,320,000. (Hearing Exhibit 37)

This amount of \$4,534,747,000, is the cost of Units 2 and 3 without AFUDC in 2007 dollars and is the capital cost which SCE&G asks this Commission to approve under the terms of the Base Load Review Act. (AFUDC and inflation will be calculated as set forth in this Order and added to it as the project proceeds.) Company Witness Byrne testified that this cost was the result of intense negotiations which resulted in substantial price concessions from Westinghouse/Stone & Webster related to their interest in closing initial contracts to ensure that their technology led in the revitalization of the nuclear industry in the United States. (Tr. III, p. 633, l. 12 – p. 634, l. 1.) ORS Witness Crisp who has international experience in power plant negotiations testified that SCE&G was the clear winner in the EPC Contract negotiations and that the resulting

price for Units 2 and 3 is quite reasonable. (Tr. VIII, p. 1954, l. 14 – 18.) No party has taken the position that this price is unreasonably high for the price for new nuclear capacity. (Hearing Exhibit 37; Tr. III, p. 575, l. 15 – 22.)

Instead, FOE argued that this price is unrealistically low. However, as discussed above, there is nothing in the EPC Contract or the cost schedules and estimates based on it to support the argument that SCE&G has underestimated the foreseeable cost of the Units. There are no terms or provisions in the EPC Contract or elsewhere that support the assertion made at the hearing that “bait and switch” pricing underlies the price presented in the Combined Application. The \$4,534,747,000 price includes all major aspects of plant construction and licensing, reasonable estimates of owner’s cost, including licensing and permitting costs and project oversight, reasonable estimates of the costs of transmission upgrades associated with the Units, reasonable if not generous estimates of inflation, and reasonable amounts of additional project contingencies in addition to those already included in the underlying price bids and estimates. (Hearing Exhibit 2, SAB-3.) Given the contractual commitments, inflation assumptions and contingencies that this price includes, the Company’s price estimate constitutes an estimate of the price of the Units that is reasonable and prudent and provides an appropriate basis for approved capital costs to be established in the requested base load review order.

6. The Company’s Plan for Financing Units 2 and 3

Certain of the intervenors have raised questions about whether SCE&G can

successfully finance the construction of Units 2 and 3. The concerns raised relate to a) the specificity of SCE&G's financing plan as presented in this proceeding, b) the overall ability of SCE&G to finance the project, and c) the ability of SCE&G to finance the project in the context of the liquidity and financial crisis that the nation is experiencing at this time.

a. The Reasonableness and Practicality of SCE&G's Financing Plan

The record shows that SCE&G will finance the immediate cash needs of its construction program using short-term borrowing. (Tr. IV, p. 932, l. 11 – 12.) Later, as short term debt reaches a sufficient amount, the Company will replace the short-term debt with medium to long term debt. (Tr. IV, p. 932, l. 14 – 16.) The timing, size, and terms of these medium-term to long-term debt issuances will depend on market conditions at those times and the cash needs of the project as they develop. As to capital structure, Mr. Addison testified that the Company will monitor its equity to capital ratios, and plans to issue equity sufficient to finance the nuclear investment on a 50-50 debt/equity basis over time. (Tr. IV, p. 932, l. 21 – p. 933, l. 1.) The timing and amount of these future equity issuances will also depend on future market conditions. (Tr. IV, p. 933, l. 1 – 3.)

As Company Witness Addison testified, this approach is in keeping with the Company's standard practice when investing in major capital projects on its system. As is typically the case, the timing and amount of future debt and equity issuances cannot be predicted with specificity. (Tr. IV, p. 932, l. 11 – 20.)

SCE&G will use revised rates under the provisions of the Base Load Review Act to generate funds to pay debt service on the newly issued debt, and to provide earnings to support the newly issued equity. (Tr. IV, p. 917, l. 14 – 19.) These revised rates filings will allow the Company to obtain a timely recovery of the cost of capital associated with its ongoing investment in the construction of the new units as that construction proceeds. In the Combined Application and the exhibits to the testimony of Company Witness Best, the Company has provided a detailed schedule of the revenue requirements to support its investment in the new units year to year. It has also provided the projected rate adjustments year by year to support this investment. The anticipated rate adjustments will be made through revised rate filings under the Base Load Review Act. As Company Witness Addison testified, these adjustments are self-calibrating and will reflect the current cost of debt, the current capital structure and the current amount of capital investment in the Units at the time of each revised rates proceeding. They will reflect a return on equity that is set at a rate, 11%, that is sufficient in current conditions, but can change if the Commission sets a different return in a future rate proceeding. The rate adjustments needed to support the construction of the Units will be spread over the period between 2009 and 2019. In no year is any projected increase related to the investment in the Units anticipated to exceed 4%. (Tr. IV, p. 924, l. 12 – 21.)

Based on the evidence on the record in this proceeding, the Commission finds that the financial plan set out here is reasonable, prudent and practical.

In addition, as Mr. Addison testified, this plan has been presented to the investment community, including rating agency personnel, investment analysts, institutional investors, and hedge-fund investors. They have been supportive of the plan and the Company's ability to raise capital under it, assuming a positive outcome to these proceedings. Their support is indicated in the strong investment grade debt ratings that have been affirmed for SCE&G's debt, and in the reasonable stock prices that the Company has maintained even in the face of current conditions. The evidence on the record clearly supports the Company's ability to finance the construction of Units 2 and 3 using its current financing plan and the mechanisms provided by the Base Load Review Act. (Tr. IV, p. 943, l. 5 – p. 944, l. 2.)

b. The Level of Detail Presented in the Plan

Certain of the intervenors challenged the level of detail presented concerning the Company's financial plan. The testimony on the record of this case, however, shows that the scope and detail of the financial plan as presented here is not in any way deficient for purposes of this proceeding. As Mr. Addison testified, the plan presented here is the same plan that has been presented to the rating agencies, to investment analysts and to investors. The plan does not contain details concerning the size and dates of future debt and equity issues, because those details depend on the timing of future cash needs, and the nature of future market conditions which cannot be known at this time. (Tr. IV, p. 931, l. 13 – 15.) Instead, under the Company's plan, the timing, size and terms of future debt and equity issuances remain flexible. The record shows that the scope and detail

provided concerning this plan is sufficient to allow the Commission to evaluate the reasonableness and prudence of the decision to build Units 2 and 3, and to determine that the plan is both practical and realistic. (*See generally*, Tr. IV, p. 951 – 955.)

c. SCE&G's Ability to Execute the Plan in Current Markets

Certain intervenors challenge the reasonableness and prudence of the Company's decision to proceed with the construction of Units 2 and 3 in the face of current economic conditions. Certain intervenors have questioned whether the Company will be able to raise the required funds given the recent liquidity crisis and the tight financial markets that have resulted.

The record shows, however, that the Company has been able to maintain access to capital even during the height of the liquidity crisis. The Company's CFO, Mr. Addison, testified concerning the Company's experience during this period. He testified that during the last week of September 2008, which was at the height of the liquidity crisis, SCE&G went to the market for \$250 million in 10-year first mortgage bonds to fund its operations, including ongoing investments in Units 2 and 3, and to increase its cash reserves. (Tr. IV, p. 928, l. 17 - 19.) In all, the Company received formal expressions of interest in these bonds that totaled \$1.3 billion. (Tr. IV, p. 928, l. 22 – p. 929, l. 1.) In light of this market response, SCE&G increased the size of the ultimate issue to \$300 million and tightened the coupon interest rate on the bonds from 6⁷/₈ percent interest to 6¹/₂ percent. (Tr. IV, p. 928, l. 17 – p. 929, l. 3; Tr. IV, p. 950, l. 19 – 20.) The bond issue was successfully closed during the first week in October and, according to Mr.

Addison, the Company has continued to receive unsolicited inquiries from large investors wanting to acquire more SCE&G bonds. (Tr. IV, p. 928, l. 17 – p. 929, l. 11.)

At the same time, the Company has continued to maintain a stock price that supports its access to additional equity capital on reasonable terms. (Tr. IV, p. 928, l. 10 – 15.) As to debt ratings, Moody's affirmed a strong, investment grade rating for SCE&G in November, 2008. (Tr. VI, p. 1241, p. 7 - 21.) The rating agency specifically recognized SCE&G's ability to access capital bond markets under current market conditions as evidence of investors' "flight to quality and perceived comfort in lower risks associated with rate-regulated business activities." (Tr. VI, p. 1242, l. 4 – 12.)

As Mr. Addison points out, in times of economic uncertainty, the market tends to favor financially solid and reliable companies like SCE&G as "safe harbors" for capital. (Tr. IV, p. 929, l. 14 – 21.) The record supports the fact that SCE&G does maintain reasonable access to capital in spite of the recent economic downturn. Current conditions have not made it impossible or unduly difficult for SCE&G to finance the construction of Units 2 and 3. (Tr. IV, p. 951, l. 13 – 15.)

d. Santee Cooper as a Financial Partner

Certain of the intervenors have challenged the completeness of the record as to the role of Santee Cooper in this project. The Commission does not have jurisdiction over Santee Cooper's siting of generation facilities or operation of its utility system. Therefore, the Commission is not required to rule on issues concerning Santee Cooper's need for the capacity it will purchase in Units 2 and 3 or the contribution to reliability and

system economy those Units will make to its system. Nonetheless, evidence in the record shows that Santee Cooper and the cooperatives and municipalities it serves provide electricity to some of the fastest growing areas in South Carolina. There is no reason to doubt the commitment by Santee Cooper's board and leadership to participate in this project. (*See generally*, Tr. IV, p. 955)

Certain of the intervenors have questioned whether the record in this case demonstrates Santee Cooper's ability to fulfill its financial obligations to the project. However, as the record shows, Santee Cooper is one of the largest public power utilities in the nation. (Tr. IV, p. 934, l. 7 – 9.) It has approximately \$1.4 billion in annual revenue and \$5.9 billion in assets. To support growth in its retail and wholesale service territory, Santee Cooper has accessed billions of dollars in capital in recent decades to build and upgrade power plants. (Tr. IV, p. 934, l. 10 – 12.) Santee Cooper's debt has been consistently rated AA by the major rating agencies. (Tr. IV, p. 934, l. 22 – p. 935, l. 1.) On October 24, 2008, Santee Cooper successfully marketed \$667 million in revenue bonds in the midst of the ongoing market challenges. (Tr. IV, p. 935, l. 2 – 4.) Taken together, Santee Cooper and SCE&G provide wholesale or retail service for approximately 60% of the customers in South Carolina, have combined electric revenues of over \$3.3 billion, and combined electric assets that exceed \$13 billion. They have successfully partnered in building and operating Unit 1 for over 30 years. The record clearly indicates that Santee Cooper is a partner for this project that is capable of living up to its commitments to the project and of raising the capital necessary to defray its

portion of the cost of constructing Units 2 and 3. Combined, Santee Cooper and SCE&G represent a capable team for this project. (Tr. IV, p. 935, 954 – 956.)

7. SCE&G's Ability to Oversee Construction of the Units

One important consideration concerning the reasonableness and prudence of the construction plan is how SCE&G intends to oversee that construction to protect its interests and the interest of its customers. The record in this proceeding contains a detailed description of resources and approach that SCE&G will use to ensure that those interests are protected. (Tr. III, p. 617, l. 7 – p. 620, l. 7.)

a. Internal Oversight

The Commission finds that the record contains ample evidence regarding the Company's ability to manage and oversee the construction of Units 2 and 3. Company Witness Byrne testified that the Company's new nuclear deployment team includes engineering, licensing, construction, quality assurance, operations, training and accounting personnel who will provide comprehensive oversight of project construction and administration of the EPC Contract. SCE&G was in the process of hiring additional individuals at the time of the hearing. (Tr. III, p. 617, l. 10 – 13.) Mr. Byrne testified that specific members of the team will be charged with oversight of each component of the construction program and EPC Contract such that SCE&G's oversight group will mirror the organizational structure of the Westinghouse/Stone & Webster team that is building the Units. (Tr. III, p. 617, l. 13 – 20.) Members of the oversight group will sit in on construction meetings, participate in inspection and testing and acceptance protocols, and

review and monitor issues of cost, budget compliance and milestone progress. (Tr. III, p. 617, l. 20 – p. 618, l. 5.) All told, more than 50 SCE&G personnel will be committed to the new nuclear deployment team. (Tr. II, p. 179, l. 15 – 17.)

This construction oversight group is reporting to SCE&G's General Manager of New Nuclear Deployment, will meet, as necessary, with the Project Directors for Westinghouse/Stone & Webster to review project status and schedule and will also meet with them monthly for in-depth reviews of budget and payment issues. (Tr. III, p. 618, l. 1 – 11.) The new nuclear deployment organization will issue written reports monthly to SCE&G's Senior Vice President for Generation and Chief Nuclear Officer and will meet quarterly with the Executive Steering Committee for the Project which is comprised of the President of SCE&G and the Chief Operating Officer of Santee Cooper. (Tr. III, p. 618, l. 11 – 15.) The General Manager of the New Nuclear Deployment group also has the authority to escalate issues to this senior leadership group at any time. (Tr. III, p. 618, l. 15 – 16.)

b. Third-Party Oversight

In addition to the oversight functions discussed above, the plant construction will be subject to oversight and review by the NRC. As testified by Company witness Byrne, the level of NRC oversight and control over the site will be significant and will be comparable to what it would be for an operating nuclear power plant, although focused specifically on construction and fabrication rather than operations. (Tr. III, p. 584, l. 8 – 14.) The Company expects as many as seven NRC inspectors to be on-site full time

during construction. (Tr. III, p. 584, l. 14 – 16.) According to Mr. Byrne, the number of inspectors will be staged, beginning with module fabrication on site, and additional NRC inspection teams will be sent to the site on a regular basis to inspect specific activities such as welding, ITAACs, start-up and testing. (Tr. III, p. 584, l. 16 – 20.)

In addition, this project will be subject to regular and continuous review and oversight by the ORS pursuant to the Base Load Review Act. S.C. Code Ann. § 58-33-277. Based upon the foregoing, the Commission finds that the Company has produced sufficient evidence to show that it will be able to sufficiently monitor and manage the construction of the Units 2 and 3 at the Jenkinsville site.

8. SCE&G's Ability to Operate Units 2 and 3 Successfully

Certain of the intervenors challenged SCE&G's ability to operate Units 2 and 3 successfully when constructed. Their concerns centered on SCE&G's size as a utility and its lack of a fleet of nuclear plants. However, the record clearly indicates that SCE&G has very successfully operated Unit 1 as a single unit for decades and has compiled an enviable operating record. As Company Witness Byrne testified, utilities that operate fleets of nuclear plants nationally or regionally have not performed better or established a better nuclear operating culture than SCE&G. (Tr. IV, p. 864, l. 7 – 20.) In fact, he testified that fleet utilities may be at a disadvantage in retaining and managing a skilled operating team because their operations are widely disbursed and the chain of command is longer. (Tr. IV, p. 864, l. 77 – p. 865, l. 21.) Both Company Witness Byrne and ORS Witness Crisp testified concerning the strength of SCE&G's current nuclear operations

and culture. (Tr. III, p. 551, l. 8 – 19; Tr. IV, p. 858, l. 20 – p. 859, l. 4.) The record shows that SCE&G has been consistently successful in operating Unit 1 as a single unit. There is nothing to indicate that SCE&G cannot also successfully operate Units 2 and 3.

9. Risks of Construction

As required by S.C. Code Ann. § 58-27-250(8), SCE&G presented a comprehensive list of the risk factors it had identified concerning the construction and operation of the Units. (*See* Hearing Exhibit 2, SAB-7.) In his testimony, Company Witness Byrne discussed those risks and the steps that SCE&G is taking to mitigate their potential to affect adversely the cost of the Units or the construction schedule for them. (*See generally*, Tr. III, p. 615 – 617.)

The record shows that the risks of proceeding with construction of these Units include licensing and regulatory risks, which include the risk that the NRC or other licensing agencies might delay the project by delaying the issuance of necessary permits, or might change regulatory or design requirements so as to increase costs or create construction delays. Risks of the project also include the risks related to the design and engineering that remains to be done on the Units; risks of procurement, fabrication and transportation related to equipment and components for the Units; construction and quality assurance risks generally; risks related to hiring, training and retaining the personnel needed to construct and operate the Units; financial and inflation risks; and disaster and weather-related risks. (Tr. III, p. 615, l. 14 – 21.)

In ruling on whether the decision to construct Units 2 and 3 is reasonable and prudent, the Commission must evaluate the risks of constructing these units compared to the risks of meeting the energy needs of SCE&G's customers by other means. As Mr. Byrne and Mr. Marsh testified, the risks related to other alternatives include the uncertainty as to future CO₂ emissions cost; the uncertainty as to future coal and natural gas prices and supplies; the relatively large amount of coal and gas-fired generation already included in SCE&G's generation mix; the uncertainty as to the future costs and availability of AP1000 units or other nuclear units; the loss of special Federal tax incentives if construction is deferred and other factors. (Tr. III, p. 616, l. 4 – 20; Tr. II, p. 170, l. 15 – p. 172, l. 16.)

There is no risk-free means to meet the future energy needs of SCE&G's customers or of the State of South Carolina. Based on the evidence of record, the Commission finds that it is reasonable and prudent to proceed with the construction of Units 2 and 3 in light of the information available at this time and the risks of the alternatives. As the record also indicates, the Company has taken reasonable steps to identify and mitigate risk factors related to this project. The Commission has reviewed the risks of the project as mitigated by SCE&G and has determined that it is reasonable and prudent to assume these risks in light of the risks of reliance on other energy sources to meet customers' future energy needs.

10. Risks Shifting

FOE has proposed that the Commission should attempt in its base load review order to preclude SCE&G from seeking recovery of any additional costs that might arise due to the occurrence of specified or unspecified risks of the project. The Commission finds that this request is contrary to language and intent of the Base Load Review Act. That act envisions a thorough prudency review of the decision to construct the Units at this juncture. As the act envisions, ORS and the other parties to this case have been given a full opportunity to conduct discovery and present evidence on the prudency of the Company's decision to proceed with the construction. ORS has in fact conducted a thorough investigation of the decision to construct the Units and has employed a diverse panel of well-qualified internal and external experts to do so. For its part, the Company has presented comprehensive and candid testimony concerning its risk assessment and decision making process related to these Units.

The Commission's approval of the reasonableness and prudency of the Company's decision to proceed with construction of the Units rests on a thorough record and detailed investigation of the information known to the Company and the parties at this time. Once an order is issued, the Base Load Review Act provides that the Company may adjust the approved construction schedule and schedules of capital cost if circumstances require, so long as the adjustments are not necessitated by the imprudence of the Company. S.C. Code Ann. § 58-27-270(E). The statute does not allow the Commission to shift risks back to the Company, as Ms. Brockway suggests, nor does the Commission find any

justification for doing so in the record of this proceeding. In addition, risk shifting could jeopardize investors' willingness to provide capital for the project on reasonable terms which, in turn, could result in higher costs to customers.

B. Anticipated Construction Schedules and Contingencies and Anticipated Components of Capital Cost and the Schedules for Incurring Them with Contingencies

The Base Load Review Act requires the Commission to determine “the anticipated construction schedule for the plant including contingencies [and] the anticipated components of capital costs and the anticipated schedule for incurring them, including specified contingencies.” S.C. Code Ann. § 58-33-270(B)(1), (2).

1. Construction Schedule

As discussed above, Westinghouse/Stone & Webster has contractually committed to have substantially completed Unit 2 by April 1, 2016 and Unit 3 by January 1, 2019. An anticipated construction schedule, in the form of a milestone schedule leading to completion of the two Units by the substantial completion dates mentioned above, was included in the Combined Application as Exhibit E and was introduced into the evidence as Hearing Exhibit 2, SAB-5 (“Exhibit E”). As to Exhibit E, the Commission finds that the milestone schedule it contains represents an appropriate anticipated construction schedule for the plant as required by the Base Load Review Act and approves it as such. The Commission has also reviewed the detailed construction schedule comprising Exhibit E to the EPC Contract which was entered into the record as Hearing Exhibit 5. This detailed construction schedules list tens of thousands of individual activities and tasks.

Certain interveners suggested that this document might form a suitable approved construction schedule for purpose of this order, but as the record indicates, this schedule is too detailed and subject to too much change and amendment to serve as the approved construction schedule envisioned by S.C. Code Ann. § 58-33-270(B)(1).

2. Plant Construction Cost Forecasts

The anticipated components of capital cost for the Units by are set forth on Exhibit F to the Combined Application, which was entered into the record of this proceeding as Hearing Exhibit 16, EEB-1 (“Exhibit F”). This capital cost schedule shows the anticipated capital cost of the plant and associated transmission, by year, broken down into the seven cost categories contained in the EPC Contract, as well as owner’s cost, transmission cost, and the forecasted amount of AFUDC. This schedule also sets forth the capital cost contingency associated with the plant costs and transmission costs by year. The base dollars in the schedule are all 2007 dollars, and inflation or escalation adjustments are separately stated by year for each of the major types of cost (plant cost, transmission cost, and contingencies).

SCE&G Witness Byrne testified that the estimates of EPC and owner’s costs contained in Exhibit F are reasonable and provide a reliable forecast of plant costs based on the information known to the Company at this time. The Commission accepts this testimony as credible and finds that the plant construction cost projections set forth on Exhibit F, specifically the Cumulative Project Cash Flow, provide an appropriate schedule of capital cost of Units 2 and 3 for purposes of this proceeding. (Tr. III, p. 601,

l. 10 – p. 602, l. 12.) As the Base Load Review Act envisions, the Commission is approving an overall capital cost per year from the project. The anticipated schedule of construction cost for the project is the Cumulative Project Cost Flow in Exhibit F. The more detailed cost categories set forth in Exhibit F should be updated for reporting and monitoring purposes, but are not the basis on which compliance with capital cost schedules established herein will be determined going forward.

3. Transmission Cost Forecasts

Company Witness Young testified concerning the transmission upgrades that would be needed to deliver the power produced by Units 2 and 3 to customers and the cost of those upgrades. (*See generally*, Tr. XII, p. 2716 – p. 2729.) His testimony supports the reasonableness of those cost estimates. (*Id.*) The Commission accepts this testimony as credible and finds that the transmission cost projections set forth on Exhibit F provide an appropriate basis for establishing the anticipated cost of transmission improvements associated with Units 2 and 3 for purposes of this proceeding.

Company Witness Young further testified that SCE&G intends to reroute the new transmission line it will build to support Unit 2 to better serve growth along the Interstate 77 corridor north of Columbia. (Tr. XII, p. 2721, l. 6 – 20.) The estimated cost of the line as originally routed is 74.2% of the estimated cost of the rerouted line. (Tr. XII, p. 2722, l. 20 – p. 2723, l. 3.) In keeping with standard practice in such cases, SCE&G intends to treat 74.2% of the rerouted line as a cost of Unit 2 with the balance being considered as routine increase in transmission system investment and not as a plant cost

under the Base Load Review Act. SCE&G has asked to be allowed to adjust this percentage if such an adjustment is required due to an expansion in the scope of the line construction project in the future. (Tr. XII, p. 2723, l. 3 – 5.) The Commission finds that this request is reasonable and appropriate and grants it on the term set forth in Mr. Young's testimony.

4. The Construction Cost Contingency Pool

The Base Load Review Act requires that the Commission establish contingencies to apply to the estimate of plant capital costs approved under its terms. S.C. Code Ann. § 58-33-270(b)(2). As set forth in the testimony of Company Witnesses Byrne and Best, in preparing Exhibit F, the company established a cost contingency percentage for each pricing category under the EPC Contract, as well as for owner's costs and transmission costs. These contingency percentages were determined as a matter of sound engineering judgment based on SCE&G's assessment of the potential for actual costs to be greater than the forecasted costs based on such things as the anticipated need for change orders, the potential for work delays due to weather or unanticipated conditions, the potential for delays in receiving licenses and permits, the possibility that actual inflation would exceed applicable estimates or indices, and the possibility that the estimates of the Units of time and materials used to price the project might understate actual requirements. (Tr. III, p. 620, l. 13 – 15; Tr. VII, p. 1634, l. 17 – p. 1635, l. 8; Exhibit 16, EEB-2, p. 4)

The Commission has reviewed these contingencies and finds that they represent a reasonable set of contingencies for use in forecasting the cost of this project under S.C.

Code Ann. § 58-33-270(B)(2). The contingency percentage applied to each cost category bears a reasonable relationship to the risk of additional costs being incurred in that category. In total, the contingency pool included on Exhibit F represents a significant but not excessive percentage of the total project budget. The Commission finds that it is reasonable and prudent to include the contingencies proposed by the Company in the cost estimates for Units 2 and 3 as approved in this order.

In reaching this decision, the Commission has considered two arguments made by the South Carolina Energy Users. The first is the argument that S.C. Code Ann. § 58-33-270(B)(2) does not allow the Commission to establish a construction cost contingency pool. The statutory provision in question requires that the Commission establish “the anticipated components of capital costs and the anticipated schedule for incurring them, including contingencies.” (*Id.*) The Commission finds that the plain meaning and grammatical structure of this statutory provision intends that contingencies be provided both for capital costs and for the schedule for incurring capital costs. In addition, cost contingencies are a standard and recognized feature of construction budgets. If such contingencies were not allowed under the act, the Company would be required to seek an amendment to the base load review order for every change order, scope or design change, or mis-forecast of owner’s cost or transmission cost during the life of the project. This is not a reasonable reading of the statute. Instead, the Commission reads the statute as authorizing the Company to include a reasonable capital cost contingency in its filings,

for evaluation and approval by this Commission. There is no logical or policy reason to read the statute otherwise.

The second argument made by the Energy Users is that the Company double-counted inflation in calculating the amount of the contingency presented in Exhibit F. The Energy Users did not present any testimony concerning this point from its witness Mr. O'Donnell, but instead attempted to develop this point on cross examination of Ms. Best and Mr. Addison. (*See generally*, Tr. VII, p. 1738, l. 13 – p. 1741, l. 2; Tr. VI, p. 1204, l. 23 – p. 1207, l. 5.) Both denied any such double counting. (Tr. VII, p. 1740, l. 4 – p. 1741, l. 2; Tr. VII, p. 1741, l. 23; Tr. VI, p. 1206, l. 10 – p. 1207, l. 5.) Moreover, a review of Exhibit F establishes that the Company in fact allocated contingency amounts by year in 2007 dollars, and then escalated them to current year dollars only once. The Company Commission finds that the Company did not double escalate any contingency amounts.

5. Administration of the Construction Cost Contingency Pool

As Company Witness Byrne points out, the timing of the use of contingencies is by definition unpredictable and may occur in one part of the project and not in others. (Tr. III, p. 622, l. 20 – p. 623, l. 4.) For that reason, the Company asked for the right to treat the total amount of contingency for the project as a single pool of funds such that it can allocate contingencies among categories and years as circumstances dictate. (Tr. III, p. 622, l. 8 – 11.) Doing so would not change the overall cost of the project in 2007 dollars, but would allow for greater flexibility in administering the cumulative cash flow

as issues arise in the construction process. As contingency amounts are moved from year to year, they would be adjusted to properly account for any applicable inflation related to them. (Tr. III, p. 622, l. 18 – p. 623, l. 4.)

For the reasons set forth in Mr. Byrne's testimony, the Commission finds that administering the contingency funds as a single pool of funds on the terms outlined above is reasonable and prudent. Contingencies for all categories of the construction project shall be tracked as a single item of cost, and the Company may move contingency dollars forward or back as circumstances dictate so long as appropriate adjustments to account for inflation are made when it does so. The Company may also roll unused contingency dollars forward year-to-year with appropriate inflation adjustments.

6. Schedule Contingencies

The Base Load Review Act requires that the Commission establish contingencies to apply to the plant construction schedule approved under its terms. S.C. Code Ann. § 58-33-270(B)(1). In its application and testimony, the Company asked for a construction schedule contingency of 30 months that would apply to the substantial completion dates of each unit and to each of the milestones set forth on Exhibit E. These schedule contingencies reflect the fact that there are inevitable risks and uncertainties surrounding a construction project as complex as that envisioned here. As Company Witness Byrne testified, SCE&G's most significant schedule risks concern the issuance of a COL which is a prerequisite to Westinghouse/Stone & Webster being able to proceed with nuclear safety-related construction. Other schedule concerns would involve major components

being damaged in transit or their manufacturing being delayed for any number of reasons.

Mr. Byrne testified that a delay of up to 30 months, while unlikely, is not inconceivable, and would not be likely to change SCE&G's commitment to complete the plant. (Tr. III, p. 623, l. 20 – p. 624, l. 3; Tr. III, p. 629, l. 7 – 13; Tr. III, p. 709 l. 1 – 9.) Given the full scope of the project, 30 months reflects a schedule contingency of approximately 20%, which is customary and reasonable.

As both Mr. Addison and Mr. Byrne testified, a reasonable schedule contingency allows SCE&G to assure the financial community that even a significant delay would not take away the assurances provided by the Base Load Review Act. Such assurances are a valuable means of increasing investor confidence in the project, whether or not the schedule contingency is ever used. Furthermore, a longer schedule contingency does not undercut the Company's commitment regarding price. Regardless of how the schedule contingency may be used, the Company must still meet the financial target of completing the plant for \$4,534,747,000 in 2007 dollars (net of AFUDC) to remain eligible to benefit from the Base Load Review Act's provisions.

For these reasons, the Commission grants the schedule contingency as requested such that the Company may delay any of the milestones listed on Exhibit E by up to 30 months. The Commission has carefully considered the suggestion made by ORS Witness Crisp that the schedule contingency be limited to 15 months, and that SCE&G be required to receive ORS approval to extend it to 30 months if cost projections are not being met. The Commission finds that this approach undercuts the assurance that the

contingency is meant to provide investors and the flexibility that it is meant to provide to the Company. (Tr. III, p. 339, l. 11 – 23; Tr. IV, p. 947, l. 12 – p. 948, l. 13.) Moreover, 15 months represents an unreasonably short contingency for a project of this scope. For these reasons, the Commission does not adopt this proposed amendment to the contingency.

7. Capital Cost Rescheduling

The Base Load Review Act provides for the Commission to establish contingencies to apply to the schedule on which capital costs are incurred. In the Combined Application, the Company has requested that the order in this proceeding allow it to shift costs within Exhibit F to the Combined Application, by accelerating amounts listed there by up to 24 months, or by delaying amounts listed there by up to 30 months. As the Company's Witness Mr. Byrne testified, it may be possible to accelerate some or all aspects of construction of the Units if NRC licensing takes less time than expected, if weather and site conditions are more favorable than expected, or if other circumstances permit. It is in the interest of the Company and its customers to complete the Units as early as possible, and advancing elements of the schedule may allow this. However, without a schedule contingency allowing the amounts reflected in Exhibit F to be advanced, SCE&G could be in a position of exceeding the Cumulative Project Cash Flow because the project was ahead of schedule. (Tr. III, p. 624, l. 6 – 22.) For the reasons stated in the Combined Application and the testimony of Mr. Byrne, the

Commission finds that the requested 24-month cost acceleration contingency is reasonable and should be granted.

The other aspect of the Company's request is that, consistent with the construction schedule contingency of 30 months, it be allowed a 30-month contingency to move portions of forecasted plant costs into the future where circumstances require. This delay contingency will allow the forecasted plant cost category expenditures as listed on Exhibit F to remain in step with the construction schedule as it evolves and will otherwise provide the Company with a means to insure investors that the protections of the Base Load Review Act will not be lost if delays push capital cost payments into the future. As mentioned above, such assurances are a valuable means of increasing investor confidence in the project whether or not they are ever used. Furthermore, the Company must still complete the plant for \$4,534,747,000 in 2007 dollars (net of AFUDC) to remain eligible for revised rates under the Base Load Review Act. For these reasons, the Commission finds that this 30-month capital cost rescheduling contingency is reasonable and should be granted. The Company may therefore shift into the future any part of the funds contained within any of Plant Cost Categories or the Transmission Project cost categories listed on Exhibit F by up to 30 months, as circumstances indicate.

C. Inflation Indices

The Base Load Review Act requires the Commission to establish inflation indices covering major cost components or groups of related cost components of the plants. The inflation indices used by the Company in preparing Exhibit F, and proposed for adjusting

those capital costs during plant construction are set forth in Exhibit I. (Hearing Exhibit 16, EEB-2-P.) As set forth in Exhibit I, the project costs have been allocated into nine cost categories that are defined by risk profiles for each category. (Tr. VII, p. 1634, l. 17 – 19; Hearing Exhibit 16, EEB-2-P.) Three of these cost categories involve costs that are fixed or firm with contractually fixed rates of escalation. (Tr. VII, p. 1634, l. 19 – 21.) As to these items, there is no need for the Commission to specify a different inflation index, since escalation is already included in the price, or will be included when the cost is billed using the contractually established escalation rate.

Company Witness Best has testified concerning the inflation indices that the Company proposes to use in adjusting the other cost categories. In Exhibit I, Ms. Best has submitted the specific year-by-year values for each index as well as three, five and ten-year averages. Ms. Best testified that each of the indices is widely-accepted in the industry and is appropriate for use in escalating the particular category of cost to which it intended to apply. (Tr. IV, p. 923, l. 22 – p. 924, l. 3.) These indices are discussed separately below.

1. Handy-Whitman Indices

Five of the above-enumerated cost categories provide for the fixed or actual costs to be adjusted through application of various Handy-Whitman indices. (Exhibit I, pp. 2 – 3.) As testified to by Company witness Best, the Handy-Whitman indices are well-recognized and commonly used in the utility industry to estimate the cost of constructing facilities. (Tr. VII, p. 1639, l. 9 – 11.) According to Ms. Best, SCE&G has used these

indices for decades and has determined that they are reliable and useful for estimating the cost of construction of utility facilities. (Tr. VII, p. 1639, l. 11 – 13.) Depending upon the category of costs, SCE&G has proposed the use of the Handy-Whitman All Steam Generation Plant Index, the All Steam & Nuclear Generation Plant Index, and the All Transmission Plant Index to determine the escalation amount relative to specified cost categories. (Hearing Exhibit 16, EEB-2, p. 2 – 3.) The Handy-Whitman indices also are broken down by region, and SCE&G is using the South Atlantic Region indices for purposes of calculating the escalation adjustment in this proceeding. (*Id.*) ORS witness Crisp testified that Handy-Whitman is an industry standard for escalating construction costs and using the South Atlantic Region package assures that costs are reflective of regional economic considerations. (Tr. VIII, p. 1912, l. 1 – 4.)

The Handy-Whitman indices set forth in Exhibit I are indices that are targeted to the specific types of utility construction involved in this project as well as the region in which that construction will take place. For these reasons, the Commission finds the use of the Handy-Whitman inflation indices to be appropriate for use as proposed by the Company in Exhibit I.

2. Chained GDP Index

The Company has, for planning purposes, utilized the Gross Domestic Product Chained Price Index (GDP-CPI) to escalate owner's costs. This cost category includes SCE&G's internal labor cost associated with overseeing and managing the project as well

as materials, insurance, overheads, and similar costs incurred directly by SCE&G. (Tr. VII, p. 1642, l. 7 – 11.)

The GDP-CPI is a commonly-used index of general escalation published by the U.S. Government. (Tr. VII, p. 1642, l. 10 – 11.) The Commission finds the use of the GDP-CPI inflation index to be appropriate for use in escalating owner's costs in this project as proposed by the Company in Exhibit I.

3. EPC Fixed Adjustments

Within the EPC Contract, the Firm with Fixed Adjustment A and Firm with Fixed Adjustment B cost categories, are subject to escalation based upon fixed escalation percentages. Firm with Fixed Adjustment A represents certain plant components specified in the EPC Contract. Firm with Fixed Adjustment B represents specific Westinghouse charges. (Tr. VII, p. 1637, l. 19 – 22.) These costs are escalated based on the escalation percentage specified in the EPC Contract. According to Company witness Best, the difference between these two categories regarding an inflation adjustment is that Firm with Fixed Adjustment B requires, in addition to the escalation percentage containing in Firm with Fixed Adjustment A, a modest additional amount intended to compensate Westinghouse for the additional anticipated cost of attracting and retaining qualified nuclear engineers and other nuclear specialists and for assuming the cost risks involved in the specifically nuclear aspects of this project. (Tr. VII, p. 1637, l. 22 – p. 1638, l. 6.) The actual escalation percentages assigned to each of these risk categories are set forth in confidential version of Exhibit I. (Hearing Exhibit 16, EEB-2)

The Commission finds that these contractual fixed escalators reflect reasonable escalation percentages that are the result of extended negotiations between Westinghouse/Stone & Webster and SCE&G. These percentages will in fact be used to determine the charges that SCE&G will pay for cost incurred under the EPC Contract. As such, it is appropriate that the Commission allow them to be used in escalating the cost categories to which they pertain, as set forth in Exhibit F.

4. Administration of the Inflation Indices

In the Combined Application, and in the testimony of Company Witness Best, the Company specified how it proposed to update the schedule of capital costs approved in this order for changes in the inflation indices. Specifically, in the Combined Application the Company requested:

- (a) For past periods where actual index information is available at the time SCE&G files its report, SCE&G proposes to use that actual index information in recalculating its capital cost projections;
- (b) For past periods where actual index data is not yet available at the time SCE&G files its report, SCE&G proposes to use the average for the most recent 12-month period for which actual data is then available (the “Current 12-Month Data.”) If Current 12 Month Data is used for any past period, that data will be updated in future reports when actual index information becomes available.
- (c) SCE&G also proposes to use Current 12-Month Data to update forecasts for the 12-month period that follows the close of each current reporting period.
- (d) For periods more than 12 months beyond the close of the current reporting period, SCE&G proposes to use the most current five-year average for the applicable inflation index.
- (e) In cases where out-of-period adjustments are made in index information, those adjustments will be reflected in the next report filed.

During construction of the Units, the Company will be required to calculate the escalation associated with actual payments made or cost incurred. The Company proposes to do this by converting the actual cost incurred to 2007 dollars using the appropriate escalation adjustment. It would then account for the base cost of the item and the associated escalation using the resulting figures. Such an adjustment will be required for all costs except for Fixed with No Adjustment items where no escalation adjustment is required.

This approach to updating cost data is consistent with the approach used in forecasting the cost of the Units, as set forth in Exhibit F to the Combined Application. The Commission finds that this approach to updating the schedules of capital costs is reasonable and approves its use.

5. Conclusion as to Escalators

Based upon the foregoing, the Commission hereby establishes the cost escalators as specified in Exhibit I to be the escalators to be used by the Company for updating the forecasts of plant and transmission construction costs approved in this order. The Commission directs the Company to use those indices to update the forecasted costs in its quarterly reports to the ORS and the Commission using the protocols set forth above.

D. Return on Equity

Pursuant to the Base Load Review Act, the Commission is required to establish the return on equity related to the base load plant construction. For the purposes of the Combined Application, SCE&G is requesting that the 11.0% return on equity established

in Order 2007-855-E apply to revised rates filings related to Units 2 and 3. (Tr. IV, p. 924, l. 12 – 15.) The Company has testified that it believes that, currently, a return on equity set at that 11.0% level will provide sufficient cash flow to support financing of the Units, and will meet investors' reasonable expectations of a return given the risks involved in base load construction. (Tr. IV, p. 924, l. 17 – 20.) The Commission finds that the Company's request regarding return on equity is authorized under the Base Load Review Act, S.C. Code Ann. §§ 58-33-250, and 58-33-220(16), and is approved.

E. Rate Design/Class Allocation Factors

Pursuant to the Base Load Review Act, the Commission, in a base load review order, shall establish the rate design and class allocation factors to be used in calculating revised rates related to a base load plant. In establishing revised rates, all factors, allocations, and rate designs shall be as determined in the utility's last rate order or as otherwise previously established by the Commission, except that the additional revenue requirement to be collected through revised rates shall be allocated among customer classes based on the utility's South Carolina firm peak demand data from the prior year. S.C. Code Ann. § 58-33-270(D).

The Company's electric rates were last approved by the Commission in Order No. 2007-855. As required by the Base Load Review Act, in establishing the proposed revised rates, SCE&G has utilized the factors, allocations, and rate design used to establish revised rates approved by the Commission in the prior rate order. (Tr. XII, p. 2836, l. 1 – 3.)

In the Combined Application, the Company indicated a target revenue increase of \$8,986,000. The ORS audit of the Company's application revealed that the Company had not allocated any of the proposed revenue requirements to its wholesale service. (Tr. IX, p. 2355, l. 5 – 8.) As indicated above, SCE&G's major wholesale customers are anticipated to leave the system in the near future, but those departures have not taken place yet. Taking the Company's wholesale jurisdiction into account, and based on the Company's summer 2007 coincident peak, ORS proposed an allocation of the target revenue increase to retail and wholesale of 94.33% and 5.67%, respectively. (Tr. IX, p. 2355, l. 8 – 9.) The application of the retail jurisdictional factor of 94.33% to the total Company revenue requirement results in an additional retail revenue requirement of \$7,802,491. (Tr. IX, p. 2356, l. 1 – 3.) The Company had reviewed the ORS recommendation and has agreed that the allocation factors in its proposed rate increases should be adjusted to reflect an allocation of a part of the total revenue requirement to wholesale customers accordingly. (Tr. XII, p. 2844, l. 8 – p. 2845, l. 18.)⁴ Based upon the ORS testimony, the Company has modified Exhibit N to the Application (Hearing Exhibit 36.) to reflect a recalculated retail revenue requirement of \$7,800,664. (Tr. XII, p. 2846, l. 15 – 19.)⁵ The Commission notes that these allocations may need to be reviewed and readjusted in future revised rates filings if wholesale customers depart the system as anticipated.

⁴ A typographical error in the Court Reporter's transcript identifies these pages as pp. 2744 and 2745.

⁵ A typographical error in the Court Reporter's transcript identifies this as page as p. 2746.

As further required by the Base Load Review Act, the additional revenue requirement to be collected through revised rates has been allocated among customer classes based on the Company's South Carolina firm peak demand data from the prior year. For the purposes of allocating the proposed revised rates in this case, SCE&G has utilized data from the summer peak for 2007. (Tr. IX, p. 2836, l. 3 – 7.) According to Company witness Jackson, the Summer 2007 peak demand occurred on August 10, 2007. (Tr. IX, p. 2836, l. 16.) Using this peak demand data, the relative percentages of retail demand allocation for the various classes, as reflected in Hearing Exhibit 35, KRJ-1, p. 1, are as follows: Residential Service is 48.10%; Small General Service is 17.98%; Medium General Service is 11.27%, and; Large General Service is 22.65%. (Tr. IX, p. 2836, l. 16 – 20.) The summer peak demand allocation methodology used by SCE&G to determine these percentages is the peak demand methodology historically used by the Commission in setting SCE&G's rates. (Tr. XII, p. 2836, l. 20 – 2837, l. 1.)

In reviewing the proposed rate design and class allocation factors, the Commission notes that the Company is not requesting to make any adjustment to the basic facilities or demand charges in the revised rates associated with this proceeding. (Tr. XII, p. 2839, l. 2 – 8.) The Company has testified that it has been its practice over the last twenty years to adjust basic facilities charges for retail electric service in even increments, typically of \$0.50 or more, and no such change is being requested in this proceeding. The Company has reserved its right to adjust these charges in future proceedings if the indicated increase to any of these charges is \$0.50 or more after rounding in \$0.50 increments. (Tr.

XII, p. 2839, l. 2 – 8.) The Company also seeks authorization to increase demand charges in future revised rates filings when the size of the indicated increase in demand charges makes it reasonable to do so.

Based upon the evidence and testimony, the Commission adopts as just and reasonable and in the public interest, the rate design and class allocation factors proposed by the Company in this proceeding.

F. Revised Rates: Current Investment

Pursuant to the Base Load Review Act, the Commission shall specify in a base load review order, the initial revised rates, reflecting the utility's current investment in the plant. The proposed revised rates for each customer class were submitted in this proceeding in Hearing Exhibit 36. Under the proposed revised rates, the Residential class will have an average increase in rates of 0.43%, the Small General Service class will have an average increase in rates of 0.39%, the Medium General Service class will have an average increase in rates of 0.41%, and the Large General Service class will have an average increase in rates of 0.34%. (Hearing Exhibit 36).

The Commission adopts as just and reasonable and in the public interest, the proposed rates as submitted by the Company in Hearing Exhibit 36 in this proceeding and authorizes the use of these rates for bills rendered for retail electric service thirty (30) days following the issuance of this Order.

V. PROCEDURAL AND EVIDENTIARY MATTERS

During the course of the hearing several objections and motions were raised by various parties that were taken under advisement by this Commission. The Commission's rulings on those objections and motions are as follows:

A. During the public comment portion of this proceeding, the Company asked for a standing objection to the introduction of and reliance upon opinion testimony by lay witnesses regarding subject matters at issue in this proceeding that require special skill, knowledge, experience, and training. *See* South Carolina Rules of Evidence, Rule 702 (requiring expert qualification to offer opinion testimony on issues of scientific, technical, or other specialized knowledge). The Company specifically raised concerns that lay witnesses would offer unqualified opinions regarding SCE&G's financial health and well-being, entitlement to rate recovery under the Base Load Review Act, the terms and provisions of the Base Load Review Act itself, the AP1000 units themselves, SCE&G's need for power, demand-side management programs, including energy efficiency and conservation, as well as rate recovery. (Tr. I, p. 13, l. 13 – p. 14, l. 14.) The Commission acknowledges that lay opinion testimony on these specialized subject matters is not admissible for consideration by the Commission in making its findings related to these specialized subject matters. Accordingly, and in keeping with standing Commission practice, the Commission has not considered or relied on such evidence in deciding matters at issue in this case.

B. The Company objected to portions of the prefiled testimony of FOE Witness Brockway on the grounds that they contained recommendations that are contrary to the express language of the Base Load Review Act. (Tr. III, pg. 349, l. 18 – 21.) Specifically, the Company objected to recommendations found on page 9 at line 13 to page 10 at line 11, and page 48 at line 3 to page 49 at line 13. (Tr. III, pg. 353, l. 11 – 15.)

Ms. Brockway's testimony, in relevant part, contained two recommendations. In the first, Ms. Brockway recommended that the Commission rule that the Company assumes the risks that pertain to its choice of two nuclear generation facilities by ordering that no further adjustment to the approved schedule or budget for completion of the plant may be made on account of the risks determined by the Commission to have been inadequately considered by the Company. To the extent the Company makes changes to the schedule or the budget as the result of the occurrence of the factor found to pose such a risk, the Company may not seek an increase in rates or extension of depreciation or amortization to recovery any costs above those approved in this docket. (Tr. III, p. 366, l. 13 – p. 367, l. 3.) In the second, Ms. Brockway recommended that the Commission, if it were not inclined to deny the application outright, defer the consideration of any Base Load Review Act application pending (a) a return of the financial markets to solvency and stability, (b) a reassessment of the load forecast and financial analysis underlying the proposal in light of recent economic events, (c) an adequate assessment of the risks of the present proposal, (d) an adequate assessment of the opportunities for other means to meet forecast proposal needs, and (e) a

full opportunity for stakeholder involvement in the Commission's determination regarding any new proposal the Company may make to construct one or more large central-station nuclear generation plants and obtain pre-approval of any associated costs. (Tr. III, p. 405, l. 3 – 14.)

As to the first recommendation, counsel for the Company properly points out that the recommendation is contrary to Section 270(E) of the Base Load Review Act that provides: "As circumstances warrant, the utility may petition the Commission, with notice to the Office of Regulatory Staff, for an order modifying any of the schedules, estimates, findings, class allocation factors, rate designs, or conditions that form a part of any Base Load Review order issued under this section." S.C. Code Ann. § 58-33-270(E). In addition, Counsel also cites Section 58-33-270(B) that provides that a Base Load Review order shall establish the anticipated construction schedule for the plant, including contingencies; the capital costs and anticipated schedule for incurring them, including contingencies and inflation indices used for the utility for cost in plant construction. (*Id.* at 58-33-270(B).) The Base Load Review Act clearly contemplates a utility's ability to include contingencies in its schedule, recover capital costs related to the project, and seek modification of a Base Load Review Order, subject to approval by the Commission.

The Commission finds that the recommendations by Ms. Brockway are indeed contrary to the express language of the Base Load Review Act and could be stricken from the record. However, the Commission also finds, on factual and regulatory policy grounds, that Ms. Brockway's suggestions are not justified and their inclusion in the record is not prejudicial to any party.

As to the second recommendation, the Company properly points out that the Base Load Review Act mandates a final determination and order on the part of the Commission within nine months of the filing of the application and that the Act does not provide a means whereby the Commission can defer judgment on an application. (Tr. III, p. 349, l. 22 – p. 350, l. 7.) Counsel for FOE argues that the Commission is authorized to reject an application as inadequate in certain respects and to send it back to the utility with a statement of its inadequacies. (Tr. III. p. 355, l. 1 – 13.) However, the Commission finds that the Act does not allow this Commission to defer judgment on an application as Ms. Brockway suggests. For that reason, the testimony containing Ms. Brockway's recommendation to this effect should be stricken from the record. In the alternative, the Commission finds that this testimony in the record is not prejudicial to any party since the Commission has considered the recommendation and rejected it for policy, factual, and legal reasons.

C. The Company has also objected to certain testimony offered on cross examination by Ms. Greenlaw's witness Dr. Wilder. At the hearing, Ms. Greenlaw sought to substitute an expanded version of Dr. Wilder's testimony for the direct testimony Dr. Wilder had prefiled in this docket. The Company objected to the admission of this expanded testimony on the grounds that it was not timely prefiled as required by the rules governing this proceeding.⁶ The Company's objection was sustained. In response, counsel for FOE cross examined Dr. Wilder concerning the

⁶ See S.C. Reg. 103-869. Dr. Wilder's additional testimony was marked for identification purposes only as Hearing Exhibit No. 10.

matters contained in the expanded testimony that was excluded, specifically matters related to the subject of demand-side management (DSM). The Company objected on the grounds that the subject matter was outside the admitted portions of Dr. Wilder's testimony and that, given the alignment of interest between Ms. Greenlaw and FOE, allowing FOE to elicit the excluded testimony through cross examination constituted an evasion of the prefiling requirements. (Tr. VI, p. 1292, l. 19 – p. 1293, l. 4.) FOE responded that the Commission's rules permit open cross examination of witnesses regarding matters that are otherwise relevant. (Tr. VI, p. 1295, l. 24 – p. 1296, l. 4.)

For the reasons cited by the Company, the Commission sustains the Company's objection regarding Dr. Wilder's cross-examination testimony related to DSM. In general, the Commission allows broad cross examination. But prefiling testimony serves an important function in discovery of issues and case preparation for adverse parties. Where parties whose interest are aligned seek to use cross examination to evade prefiling requirements and thereby prejudice other parties in their case preparation, the Commission may properly exclude the proffered testimony. In this case, it is relevant that the Company filed rebuttal testimony addressing each of the issues raised by Dr. Wilder in his prefiled direct testimony. The Company, however, had no opportunity to respond to the DSM testimony injected by Dr. Wilder into the record on cross examination. For this reason, the cross examination of Dr. Wilder concerning DSM is stricken from the record.

In addition, the Commission notes that this testimony was cumulative to testimony of other witnesses and in no way would its admission change the outcome of this proceeding.

D. The Company sought to include in the record of this preceding the affidavit of Mr. Fredrick P. Hughes, Consortium Project Director, Westinghouse Electric Company, LLC. The affidavit was offered by the Company in support of its position regarding the confidential treatment of Hearing Exhibit # 5. The Affidavit was submitted and marked for identification purposes as Hearing Exhibit # 15. Counsel for FOE objected to the admissibility of this affidavit on the grounds that it constituted inadmissible hearsay, that Mr. Hughes was not available for cross examination, and that it would be erroneous to accept any of the unchallenged, un-cross-examined assertions of fact or opinion in support of any finding in the record. (Tr. VIII, pg. 1870, l. 8 – 15.) The Company responded that the affidavit was essentially duplicative of content already in the record in the form of a letter to the Commission in support of a motion for protective order, and was proffered in support of a procedural issue. (Tr. VIII, pg. 1870, l. 18 – 20.) The Company further responded that it was the Commission's practice to allow affidavits in support of motions of this nature. (Tr. VIII, pg. 1870, l. 20 – 22.) For the reasons cited by the Company, the objection of FOE is overruled.

E. Counsel for FOE has also placed a continuing objection in the record regarding the ORS' refusal to make ORS Director Dukes Scott testify regarding the conduct of the ORS and its process for reaching its position in this docket. During the course of this proceeding, Ms. Greenlaw had attempted to compel the testimony of Mr.

Scott through the issuance of a subpoena. ORS moved to quash the subpoena and the Commission, after much discussion and careful consideration, granted the motion to quash. (Tr. VIII, p. 1794, l. 1 – p. 1795, l. 3.) Counsel for FOE was heard at length in regards to the motion to quash, and FOE's later continuing objection failed to raise any new issues which would alter the Commission's earlier ruling. For this reason, FOE's objection to the ORS testimony is overruled.

VI. FINDINGS OF FACT

Based upon the Combined Application, the testimony, and exhibits received into evidence at the hearing and the entire record of these proceedings, the Commission makes the following findings of fact:

1. The Units are needed to meet the growing needs of the Company's customers for electric power, to support the continued economic development and prosperity of the State of South Carolina, and to maintain the efficiency and reliability of the Company's electrical system.
2. The Units will serve the interests of system economy and reliability as the most efficient, cost effective, practicable, and reliable means of meeting the demonstrated needs of the Company for the generation of electric power.
3. The nature of the probable environmental impact, as discussed herein, is small and has been adequately considered and addressed to the extent possible by the Company.

4. The impact of the Units upon the environment is justified given the demonstrated need for additional base load capacity, the alternative sources of energy available to meet that need, and the greater environmental impacts such alternative sources of energy would create.

5. The Company has provided reasonable assurance that the Units will conform to applicable State and local laws and regulations issued thereunder through the rigorous application for and adherence to the numerous major permits that are required and the Company has sought in connection with this proposed construction.

6. Based upon the record and the factors considered herein, public convenience and necessity require the construction of the Units.

7. The selection of the Jenkinsville site is reasonable and prudent and it is appropriate for the construction of the Units.

8. The selection of the AP1000 technology for use at this site is reasonable and prudent.

9. The Company's overall decision to proceed with construction of the Units is reasonable and prudent.

10. The anticipated construction schedule, including contingencies, presented by SCE&G is reasonable and prudent.

11. The anticipated components of capital costs and the anticipated schedule for incurring them, including specified contingencies, are reasonable and prudent.

12. The principal contractors and suppliers for construction of the Units are sufficiently qualified and their selection was reasonable and prudent.

13. The EPC Contract which governs the relationship between SCE&G and Westinghouse/Stone & Webster is reasonable and prudent as set forth above.

14. The Company's plans for financing the construction of the Units are reasonable and prudent.

15. The Company has adequately demonstrated its ability to manage and oversee the construction of the Units through its internal oversight and management programs and through the oversight of third parties, including the NRC and ORS.

16. The inflation indices used by the utility for costs of Unit construction, covering major cost components or groups of related cost components are reasonable and appropriate for use in this project.

17. The amount of outstanding CWIP in the plant not yet reflected in rates as of June 30, 2008 is \$65,960,797.

18. The return on equity of 11% as selected by the Company is affirmed.

19. The Company's weighted average cost of capital as of June 30, 2008 for purposes of establishing revised rates in this proceeding is 8.77%.

20. The retail revenue requirement for establishing revised rates in this proceeding is \$7,802,491.

21. The rate design and class allocation factors used by the Company in calculating the proposed revised rates related to this project are just and reasonable.

22. The proposed revised rates proposed by the Company in Hearing Exhibit 36 are just and reasonable and are authorized for use for bills rendered for retail electric service thirty (30) days following the issuance of this Order.

NOW, THEREFORE, IT IS HEREBY ORDERED as follows:

1. The Combined Application of the South Carolina Electric & Gas Company, filed May 30, 2008, to construct and operate two 1,117 net megawatt nuclear power plants to be located at the V.C. Summer Nuclear Station site near Jenkinsville, South Carolina is hereby approved as set forth herein.
2. A Certificate of Environmental Compatibility and Public Convenience and Necessity is hereby granted for construction of the Units as requested in SCE&G's Combined Application and approved herein.
3. SCE&G shall complete and file, in a separate docket, the results of the DSM assessment currently being conducted as testified to by Company witnesses Marsh and Pickles by June 30, 2009.
4. The Approved Construction Schedule, pursuant to S.C. Code Ann. § 58-33-270(B)(1), shall be as set forth in Hearing Exhibit 2, SAB-5 and attached hereto.
5. The schedule contingencies permitted under S.C. Code Ann. § 58-33-270 (B) (1) shall be thirty (30) months to delay the substantial completion date of each Unit and each milestone date set forth in the Approved Construction Schedule as set forth in Hearing Exhibit 2, SAB-5 attached hereto.
6. The Approved Capital Cost, pursuant to S.C. Code Ann. § 58-33-270(B)(2), shall be \$4,534,747,000 in 2007 dollars, net of AFUDC, as derived from

Hearing Exhibit 16, EEB-1 and Hearing Exhibit 37 and subject to escalation as provided herein.

7. The Approved Inflation Indices, pursuant to S.C. Code Ann. § 58-33-270(B)(6), applicable to the Approved Capital Costs of construction shall be as set forth in Hearing Exhibit 16, EEB-2, the public version of which is attached hereto.

8. The Approved Schedule for Incurring Capital Costs for the Units shall be the Annual Cumulative Project Cash Flow as set forth in Hearing Exhibit 16, EEB-1, the public version of which is attached hereto.

9. SCE&G is authorized to employ a Cost Rescheduling contingency such that it may accelerate amounts set forth in Hearing Exhibit 16, EEB-1 by up to twenty-four (24) months or delay them by up to thirty (30) months as it shall determine to be appropriate, provided that the cost of the project shall not exceed \$4,534,747,000 in 2007 dollars (net of AFUDC) and before escalation. Any changes in costs shall be adjusted for escalation at the established escalation rates as set forth herein.

10. A Construction Contingency Pool of \$438,293,000 in 2007 dollars shall be established consisting of the Plant Cost Contingency and Transmission Projects Contingency set forth in the confidential version of Hearing Exhibit 16, EEB-1. This pool shall be tracked as a single item of cost. The Company may move Construction Contingency funds forward or backward as circumstances dictate so long as appropriate adjustments to account for escalation made when doing so. The Company may also roll

unused Construction Contingency funds forward year to year with appropriate inflation adjustments.

11. SCE&G shall compute AFUDC on construction work in progress pursuant to the terms of the Base Load Review Act.

12. In making its quarterly reports pursuant to S.C. Code Ann. § 58-33-277, SCE&G shall update and amend the schedule of Approved Capital Costs to show the effect of the use of all contingencies and escalation factors as approved in this Order and the calculation of AFUDC on construction which progress not included in rates. Actual payments (except for Fixed with No Adjustment items) shall be discounted to 2007 dollars using the appropriate escalation rates and an escalation shall be separately stated for them.

13. The return on equity for revised rates calculations, pursuant to S.C. Code Ann. § 58-33-270(B)(3), shall be 11.0% as established in Commission Order 2007-855-E unless and until the Company files for a different rate pursuant to that act.

14. The rate design as set forth by Company Witness Jackson in Hearing Exhibit 36, is approved provided that changes to basic facilities charges shall be made in increments of \$0.50 or more and shall be made when the approved rate design yields a charge that will round up to an adjustment of \$0.50 or more. The Company may increase demand charges in future revised rates filings when the size of the indicated increase in demand charges makes it reasonable to do so.

15. The Company shall charge the revised rates contained in Hearing Exhibit 36 for bills rendered for retail electric service thirty (30) days following the date of this Order.

BY ORDER OF THE COMMISSION:

Elizabeth E. Fleming, Chairman

ATTEST:

John E. Howard, Vice-Chairman

EXHIBIT E

ANTICIPATED CONSTRUCTION SCHEDULE

**Combined Application of South Carolina Electric & Gas
Company for a Certificate of Environmental Compatibility and Public Convenience and
Necessity and for a Base Load Review Order
Public Service Commission Docket No. 2008-196-E**

1. INTRODUCTION

This **Exhibit E** sets forth the current projected milestones under the EPC Contract that are proposed for use of the Office of Regulatory Staff in evaluating the progress of construction of VCSNS Units 2 and 3. These dates are subject to the schedule contingency requested in the Application.

This schedule is based on the generic schedule for Westinghouse AP1000 reactor construction which does not include project and site specific requirements. Certain activities such as the clearing, grubbing and grading at the site will need to commence earlier than listed here for reasons related to specific conditions at the VCSNS site (*i.e.*, the need to complete the site rail line relocation in advance of VCSNS Unit 1 Outage 18).

V. C. SUMMER PROJECT MILESTONES

| Year | Quarter | Milestone |
|------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2008 | 2 | 08-2Q-1 Approve Engineering, Procurement and Construction Agreement. |
| | | 08-2Q-2 Issue Purchase Orders to nuclear component fabricators for Units 2 and 3 Containment Vessels, Passive Residual Heat Removal Heat Exchangers, Accumulator Tanks, Core Makeup Tanks, Squib Valves, Steam Generators, Reactor Coolant Pumps, Pressurizer Vessels, Reactor Coolant Loop Hot Leg A Piping, Reactor Vessel Internals, Reactor Vessels, Reactor Integrated Head Packages, Control Rod Drive Mechanisms and Nuclear Island structural CA20 Modules. |
| 2008 | 3 | 08-3Q-1 Start site specific and balance of plant detailed design. |
| | | 08-3Q-2 Issue PO and submit payment to fabricator via Westinghouse for Units 2 and 3 Simulators. 08-3Q-3 Issue final Purchase Orders and submit payments to fabricators via Westinghouse for Units 2 and 3 Steam Generators, Reactor Vessel Internals and Reactor Vessels. |
| 2008 | 4 | 08-3Q-4 Issue Purchase Order and submit payment via Westinghouse to fabricator for Units 2 and 3 Transformers. |
| | | 08-4Q-1 Start clearing, grubbing and grading. 08-4Q-2 Issue final Purchase Orders and submit payments to fabricators via Westinghouse for Units 2 and 3 Core Makeup Tanks, Accumulator Tanks, Pressurizers, Reactor Coolant Loop Piping, Integrated Head Packages, Control Rod Drive Mechanisms and Passive Residual Heat Removal Heat Exchangers. |

| | | |
|------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2009 | 1 | 09-1Q-1 Start Parr Road intersection work. |
| | | 09-1Q-2 Issue final Purchase Order and submit payment via Westinghouse to fabricator for Units 2 and 3 Reactor Coolant Pumps. |
| | | 09-1Q-3 Issue Purchase Order for Long Lead Material and submit payment via Westinghouse to fabricator for Units 2 and 3 Integrated Head Packages. |
| | | 09-1Q-4 Submit partial payment to Westinghouse for Design Finalization. |
| 2009 | 2 | 09-2Q-1 Start site development. |
| | | 09-2Q-2 Issue Purchase Orders and submit payments via Westinghouse for Units 2 and 3 Turbine/Generators and Main Transformers. |
| | | 09-2Q-3 Receive Units 2 and 3 Core Makeup Tank material at fabricator. |
| | | 09-2Q-4 Submit partial payment to Westinghouse for Design Finalization. |
| 2009 | 3 | 09-3Q-1 Issue Purchase Order and submit payment via Westinghouse for Unit 2 Turbine Generator Condenser material. |
| | | 09-3Q-2 Submit payments to fabricators via Westinghouse for Units 2 and 3 Reactor Coolant Pumps and Passive Residual Heat Removal Heat Exchangers. |
| | | 09-3Q-3 Submit partial payment to Westinghouse for Design Finalization. |
| | | 09-4Q-1 Start erection of construction buildings, to include craft facilities for personnel, tools and equipment; first aid facilities; field offices for site management and support personnel; temporary warehouses; and construction hiring office. |
| 2009 | 4 | 09-4Q-2 Receive Unit 2 Reactor Vessel flange nozzle shell forging at fabricator. |
| | | 09-4Q-3 Submit partial payment to Westinghouse for Design Finalization. |
| | | 09-4Q-4 Issue Purchase Order and submit payment via Westinghouse to fabricator for Units 2 and 3 Radiation Monitoring Systems. |
| | | 10-1Q-1 Receive Unit 2 Reactor Vessel Internals core shroud material at the fabricator. |
| 2010 | 1 | 10-1Q-2 Payment to fabricator via Westinghouse for Unit 2 Turbine/Generator Feedwater Heater material. |
| | | 10-1Q-2 Receive raw material at fabricator for Unit 2 Reactor Coolant Loop piping. |
| 2010 | 2 | 10-2Q-1 Receive Unit 2 Reactor Vessel Internals upper guide tube Material at the fabricator. |
| | | 10-2Q-2 Submit payment to Westinghouse for the Unit 2 Control Rod Drive Mechanisms. |
| | | 10-2Q-3 Perform cladding on Unit 2 Pressurizer bottom head at fabricator. |

| | | |
|------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2010 | 3 | <p>10-3Q-1 Start excavation and foundation work for the standard plant for Unit 2.</p> <p>10-3Q-2 Receive Unit 2 Steam Generator tube sheet forging at the fabricator.</p> <p>10-3Q-3 Complete Unit 2 Reactor Vessel outlet nozzle weld to flange at the fabricator.</p> <p>10-3Q-4 Start Unit 2 Condenser fabrication at the fabricator.</p> |
| 2010 | 4 | <p>10-4Q-1 Complete preparations for receiving the first module on site for Unit 2.</p> <p>10-4Q-2 Receive Unit 2 Steam Generator transition cone forging at the fabricator.</p> <p>10-4Q-3 Complete Unit 2 Reactor Coolant Pump casing fabrication.</p> <p>10-4Q-4 Complete machining, heat treatment and Nondestructive examination of Unit 2 Reactor Coolant Loop Hot Leg A piping at the fabricator.</p> |
| 2011 | 1 | <p>11-1Q-1 Complete Unit 2 hydrotests for Core Makeup Tanks.</p> <p>11-1Q-2 Issue Purchase Order and submit payment via Westinghouse to fabricator for Units 2 and 3 Polar Crane main hoist drums and wire rope.</p> |
| 2011 | 2 | <p>11-2Q-1 Receive Unit 3 Control Rod Drive Mechanism latch housing/rod travel housing material at the fabricator.</p> <p>11-2Q-2 Complete Unit 2 Condenser shipment preparation at the fabricator.</p> |
| 2011 | 3 | <p>11-3Q-1 Start placement of mud mat for Unit 2.</p> <p>11-3Q-2 Receive Unit 2 Steam Generator tubing at the fabricator.</p> <p>11-3Q-3 Complete upper head welding on Unit 2 Pressurizer at the fabricator.</p> <p>11-3Q-4 Complete Unit 3 Reactor Vessel closure head cladding at the fabricator.</p> |
| 2011 | 4 | <p>11-4Q-1 Begin Unit 2 first nuclear concrete placement.</p> <p>11-4Q-2 Complete fabrication of Unit 2 Reactor Coolant Pump stator core at the fabricator.</p> <p>11-4Q-3 Begin Unit 2 Reactor Vessel Internals welding of core shroud panel ring at the fabricator.</p> <p>11-4Q-4 Complete 1st Unit 2 Steam Generator tubing installation at the fabricator.</p> <p>11-4Q-5 Ship Unit 2 Reactor Coolant Loop pipe to site.</p> <p>11-4Q-6 Ship Unit 2 Control Rod Drive Mechanism to site.</p> <p>11-4Q-7 Complete weld for Unit 2 Pressurizer lower shell to head at the fabricator.</p> <p>11-4Q-8 Complete 2nd Steam Generator tubing installation for Unit 3 at the fabricator.</p> <p>11-4Q-9 Submit partial payment to Westinghouse for Design Finalization.</p> |

| | | |
|------|---|-----------------------------------------------------------------------------------------------------------------------------|
| 2012 | 1 | 12-1Q-1 Set module CA04 for Unit 2. |
| | | 12-1Q-2 Complete post weld heat treat of 2 nd tubesheet for Unit 2 Passive Residual Heat Removal Heat Exchanger. |
| | | 12-1Q-3 Complete 1 st tubesheet drilling for Unit 2 Passive Residual Heat Removal Heat Exchanger. |
| | | 12-1Q-4 Complete girder fabrication for Unit 2 Polar Crane. |
| | | 12-1Q-5 Complete preparations for Unit 3 Turbine Generator Condenser shipment. |
| 2012 | 2 | 12-2Q-1 Set Containment Vessel ring #1 for Unit 2. |
| | | 12-2Q-2 Deliver Unit 2 Reactor Coolant Pump casings to the site. |
| | | 12-2Q-3 Complete Unit3 Reactor Coolant Pump stator core. |
| | | 12-2Q-4 Receive core shell forging for Unit 3 Reactor Vessel. |
| | | 12-2Q-5 Complete Unit 3 Pressurizer cladding on bottom head. |
| 2012 | 3 | 12-3Q-1 Set Nuclear Island structural module CA03 for Unit 2. |
| | | 12-3Q-2 Complete 1 st Unit 2 Squib Valve factory operational test . |
| | | 12-3Q-3 Complete Unit 3 Accumulator Tank hydrotest. |
| | | 12-3Q-4 Complete electrical panel assembly for Unit 2 Polar Crane. |
| | | 12-4Q-1 Start containment large bore pipe supports for Unit 2. |
| 2012 | 4 | 12-4Q-2 Ship Unit 2 Reactor Integrated Head Package to site from fabricator. |
| | | 12-4Q-3 Complete Unit 2 Reactor Coolant Pump stator fabrication. |
| | | 12-4Q-4 Complete 2 nd Unit 3 Steam Generator tubing installation at fabricator. |
| | | 12-4Q-5 Complete 1 st Unit 2 Steam Generator hydrotest at fabricator. |
| | | 13-1Q-1 Start concrete fill of Nuclear Island structural modules CA01 and CA02 for Unit 2. |
| 2013 | 1 | 13-1Q-2 Ship Unit 2 Passive Residual Heat Removal Heat Exchanger to site from fabricator. |
| | | 13-1Q-3 Complete Unit 2 Refueling Machine Assembly factory acceptance test. |
| | | 13-1Q-4 Ship Unit 2 Reactor Vessel Internals to site from fabricator. |

| | | |
|------|---|--------------------------------------------------------------------------------------------------------------|
| 2013 | 2 | 13-2Q-1 Set Unit 2 Containment Vessel ring #3. |
| | | 13-2Q-2 Ship Unit 2 Steam Generator to site from fabricator. |
| | | 13-2Q-3 Complete preparation for Unit 2 Turbine/Generator shipment from Toshiba fabrication facility. |
| | | 13-2Q-4 Complete Unit 3 Pressurizer hydrotest at fabricator. |
| | | 13-2Q-5 Ship Unit 2 Polar Crane to site. |
| 2013 | 2 | 13-2Q-6 Receive Unit 2 Reactor Vessel on site from fabricator. |
| 2013 | 3 | 13-3Q-1 Set Unit 2 Reactor Vessel. |
| | | 13-3Q-2 Weld Unit 3 Steam Generator tubesheet to channel head. |
| | | 13-3Q-3 Complete Unit 3 Reactor Coolant Pump final stator assembly at fabricator. |
| | | 13-3Q-4 Ship Unit 2 Reactor Coolant Pumps to site from fabricator. |
| | | 13-3Q-5 Place first nuclear concrete for Unit 3. |
| 2013 | 4 | 13-4Q-1 Set Unit 2 Steam Generator. |
| | | 13-4Q-2 Preparations complete for shipment of Unit 2 Main Transformers. |
| | | 13-4Q-3 Complete Unit 3 Steam Generator hydrotest at fabricator. |
| | | 13-4Q-4 Set Unit 2 Containment Vessel Bottom Head on basemat legs. |
| 2014 | 1 | 14-1Q-1 Set Unit 2 Pressurizer Vessel. |
| | | 14-1Q-2 Complete Unit 3 Reactor Coolant Pump Factory Acceptance Test at fabricator. |
| | | 14-1Q-3 Ship Unit 3 Reactor Vessel Internals to site from fabricator. |
| | | 14-1Q-4 Issue Purchase Order and submit payment to fabricator via Westinghouse for Unit 3 Main Transformers. |
| 2014 | 2 | 14-2Q-1 Complete welding of Unit 2 Passive Residual Heat Removal System piping. |
| | | 14-2Q-2 Ship Unit 3 Steam Generator to site from fabricator. |
| | | 14-2Q-3 Ship Unit 3 Refueling Machine Assembly to site. |
| 2014 | 3 | 14-3Q-1 Set Unit 2 Polar Crane. |
| | | 14-3Q-2 Ship Unit 3 Reactor Coolant Pumps to site from fabricator. |
| 2014 | 4 | 14-3Q-3 Complete shipment preparations for Unit 3 Main Transformers from fabricator. |
| 2014 | 4 | 14-4Q-1 Ship last Unit 3 Spent Fuel Storage Rack module to site. |
| 2015 | 1 | 15-1Q-1 Start electrical cable pulling in Unit 2 Auxiliary Building. |
| | | 15-1Q-2 Complete Unit 2 Reactor Coolant System cold hydro. |
| 2015 | 2 | 15-2Q-1 Activate class 1E DC power in Unit 2 Auxiliary Building. |

| | | |
|------|---|---------------------------------------------------------------------------------|
| | | 15-3Q-1 Complete Unit 2 hot functional test. |
| 2015 | 3 | 15-3Q-2 Install Unit 3 ring 3 for containment vessel. |
| 2015 | 4 | 15-4Q-1 Load Unit 2 nuclear fuel. |
| 2016 | 1 | 16-1Q-1 Unit 2 Substantial Completion. |
| 2016 | 2 | 16-2Q-1 Set Unit 3 Reactor Vessel. |
| 2016 | 3 | 16-3Q-1 Set Unit 3 Steam Generator #2. |
| 2016 | 4 | 16-4Q-1 Set Unit 3 Pressurizer Vessel. |
| 2017 | 1 | 17-1Q-1 Complete welding of Unit 3 Passive Residual Heat Removal System piping. |
| 2017 | 2 | 17-2Q-1 Set Unit 3 polar crane. |
| 2017 | 3 | 17-3Q-1 Start Unit 3 Shield Building roof slab rebar placement. |
| 2017 | 4 | 17-4Q-1 Start Unit 3 Auxiliary Building electrical cable pulling. |
| 2018 | 1 | 18-1Q-1 Activate Unit 3 Auxiliary Building class 1E DC power. |
| | | 18-2Q-1 Complete Unit 3 Reactor Coolant System cold hydro. |
| 2018 | 2 | 18-2Q-1 Complete Unit 3 hot functional test. |
| 2018 | 3 | 18-3Q-1 Complete Unit 3 nuclear fuel load. |
| 2018 | 4 | 18-4Q-1 Begin Unit 3 full power operation. |
| 2019 | 2 | 19-1Q-1 Unit 3 Substantial Completion. |

EXHIBIT I

INFLATION INDICES

PUBLIC VERSION

**Combined Application of South Carolina Electric & Gas Company for a
Certificate of Environmental Compatibility and Public Convenience and
Necessity and for a Base Load Review Order
Public Service Commission Docket No. 2008-196-E**

1. INTRODUCTION

This **Exhibit I** provides the inflation indices and escalators, and contingency factors used by SCE&G in projecting the capital cost of the two Westinghouse AP1000 Advanced Passive Safety Power Plant (AP1000) units it proposes to construct as V. C. Summer Nuclear Station (VCSNS) Units 2 & 3 (the Units or the Facilities).

**2. EXPLANATION OF COST ELEMENTS SUBJECT TO ESCALATION
(See Attached Chart A)**

Chart A of Exhibit I provides the categories of capital investment that have been established for the project. These categories are defined by risk profiles documenting the escalations and contingencies that are applied to base project cash flow. The definitions of these profiles are determined by either contract terms or sound engineering and planning assumptions. Project cash flow is assigned to each risk profile based on common risk characteristics; and escalations and contingencies are applied to generate future cash flow for use in regulatory and planning schedules. Risk profiles are defined below:

- 1) **Fixed with No Adjustment** – These costs are fixed per the EPC Contract and escalation is not applied. Contingency risk for this cash flow is principally related to change orders and is predicted to be relatively low.
- 2) **Firm with Fixed Adjustment A** – These costs have a fixed escalation of a specified percentage applied as part of the EPC Contract. Contingency risk for this cash flow is principally related to change orders and is predicted to be relatively low.
- 3) **Firm with Fixed Adjustment B** – These costs have a fixed escalation of a specified percentage applied as part of the EPC Contract. Under the EPC Contract, this factor is expressed in two parts. One part is an inflation escalator equal to the percentage in item 2 above. The other is a small additional factor that is designated a nuclear industry administration adjustment to compensate Westinghouse for the undertaking the project.

Contingency risk for this cash flow is principally related to change orders and is predicted to be relatively low.

- 4) **Firm with Indexed Escalation** – Escalation for this schedule of costs is applied periodically under the EPC Contract based on the Handy–Whitman All Steam Generation Plant Index, South Atlantic Region. Handy-Whitman is a well recognized and commonly used construction index. The adjustment as billed under the EPC Contract will reflect the percentage increase in the Handy-Whitman All Steam Generation Plant Index, South Atlantic Region as measured between each bi-annual release of the index. For planning purposes, SCE&G is using the most recent one-year index change for 2008, and the most recent five-year average of the index for 2009 and beyond to escalate these costs. Contingency risk for this cash flow is predicted to be relatively low.
- 5) **Actual Craft Wages** – Site craft wages will be paid at actual costs. For planning purposes, SCE&G is using the most recent one–year index change of the Handy–Whitman All Steam & Nuclear Generation Plant Index, South Atlantic Region, for 2008, and the most recent five-year average of this index for 2009 and beyond to escalate these costs. Contingency risk for this cash flow is expected to be higher than average.
- 6) **Non-Labor Costs** – This schedule is paid at actual costs. For planning purposes, SCE&G is using the most recent one-year index change of the Handy–Whitman All Steam & Nuclear Generation Plant Index, South Atlantic Region, for 2008, and the most recent five-year average of this index for 2009 and beyond to escalate these costs. Contingency risk for this cash flow is expected to be moderately high.
- 7) **Time & Materials** – This schedule is paid at actual costs. For planning purposes, SCE&G is using the most recent one–year index change of the Handy–Whitman All Steam & Nuclear Generation Plant Index, South Atlantic Region, for 2008, and the most recent five-year average of this index for 2009 and beyond to escalate these costs. Contingency risk for this cash flow is expected to be moderately high.
- 8) **Owners Costs Target Estimates** – This schedule is paid at actual costs. For planning purposes, SCE&G is using the most recent one-year factor of the GDP Chained Price Index, a commonly used U.S. Government published general escalation index, to escalate 2008 costs. The most recent five-year average of this index is used to escalate costs for 2009 and beyond. Contingency risk for this cash flow is expected to be moderately high.
- 9) **Transmission Costs** – This schedule is paid at actual costs. For planning purposes, the base estimate is escalated based on the most recent Handy–Whitman Transmission Plant Index, South Atlantic Region index, and the most recent five-year average of this index,

is used to escalate costs for 2009 and beyond. Contingency risk for this cash flow is expected to be moderately high.

3. PUBLIC AND CONFIDENTIAL VERSION OF THE INTRODUCTION TO EXHIBIT I AND CHART A TO EXHIBIT I

In response to a claim of confidentiality made by Westinghouse under the provisions of the EPC Contract, SCE&G has prepared public and confidential versions of this introduction to **Exhibit I**, and of **Chart B to Exhibit I**. The differences between the two versions are as follows:

- a. The public version of this introduction to **Exhibit I** does not specify the percentage of the costs under the EPC Contract that fall within the Fixed/Firm pricing category and the additional percentage of cost that Westinghouse and Stone & Webster have agreed to offer for conversion to Fixed/Firm pricing. The confidential version of the introduction provides these percentages.
- b. The public version of this introduction to **Exhibit I**, and of **Chart B to Exhibit I** does not provide the specific inflation factors that the EPC Contract has established for the two Firm with Fixed Adjustment Categories. The confidential version sets forth these factors.
- c. The public version of **Chart B to Exhibit I** does not list the specific items of equipment or cost included in the four Fixed/Firm categories of cost. The confidential version of that document lists the specific items of equipment or cost under the heading "Cost Make-up."

SCE&G intends to make the confidential version of the introduction to **Exhibit I** and of **Chart B to Exhibit I** available to parties who sign an appropriate confidentiality agreement.

4. HANDY-WHITMAN AND GDP INDICES
(See Attached Chart B)

Chart B to Exhibit I provides five years of historical data for the Handy-Whitman (HW) All Steam Generation Plant, All Steam & Nuclear Generation Plant, and Transmission Plant, for the South Atlantic Region; as well as the Gross Domestic Product (GDP) inflation index. These are the indices discussed in **Chart A of Exhibit I** and used by SCE&G in preparing cost projections related to the Facility.

Cost Elements Subject to Escalation & Contingency

| EPC Category | Cost Make-up* | Escalation Indices/Assumptions | Contingency Assumptions |
|---------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 1) Fixed with no Adjustment | Various specified plant components | <i>Fixed Price not subject to escalation under the EPC Contract.</i> | Low Risk – 5% |
| 2) Firm with Fixed Adjustment A | Other specified plant components | <i>Fixed escalation of a specified percentage under the EPC Contract.</i> | Low Risk – 5% |
| 3) Firm with Fixed Adjustment B | Specific Westinghouse charges | <i>Fixed adjustment of different specified percentage under the EPC Contract.</i> <ul style="list-style-type: none"> - One part of the total percentage is base escalation, and - Another part is a nuclear industry administration adjustment. | Low Risk – 5% |
| 4) Firm with Indexed Adjustment | All equipment not listed elsewhere and other costs. | <i>Adjusted periodically under the EPC Contract by the Handy-Whitman All Steam Generation Plant Index.</i> | Low Risk – 5% |
| 5) Actual Craft Wages | All site craft labor. | <i>Paid at actual costs. Base estimate is escalated at Shaw/Stone Webster developed market index for target purposes. Handy-Whitman All Steam & Nuclear Generation Index used to escalate for planning purposes.</i> | High Risk – 20% |
| 6) Non-Labor Target | Construction Materials, consumables, furnish & erect subcontractors. | <i>Paid at actual costs. Base estimate is escalated at a Handy-Whitman All Steam & Nuclear Generation Index for planning purposes.</i> | Moderate-High Risk – 15% |
| 7) T&M | Startup and COLA and other permitting and licensing support. | <i>Paid at actual costs under the EPC Contract. Base estimate is escalated at Handy-Whitman All Steam & Nuclear Generation Index for planning purposes.</i> | Moderate-High Risk – 15% |

| Owners' Cost Category | Cost Make-up | Escalation Indices/Assumptions | Contingency Assumptions |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 8) Project Target Estimates | All equipment, labor, materials, insurance, overhead, etc. not covered under the EPC Contract. | <i>Paid at actual costs. Base estimate is escalated at Gross Domestic Product Chained Price Index historical average for planning purposes.</i> | Moderate-High risk – 15% |
| 9) Transmission Projections | New Transmission Lines and Transmission System upgrades to support interconnection of new Nuclear units per Generator Interconnection Facilities Studies. | <i>Paid at actual costs. Base estimate is escalated at Handy-Whitman Transmission Plant Construction Index for planning purposes.</i> | Moderate-High risk – 15% |

* Associated overheads and profits will be included in cost elements.

Exhibit I, Chart B

HW All Steam Generation Plant

| <u>Year</u> | <u>Index</u> | <u>Yr/Yr change</u> | <u>Three year Average</u> | <u>Five Year Average</u> | <u>Ten Year Average</u> |
|-------------|--------------|---------------------|---------------------------|--------------------------|-------------------------|
| 2007 | 491 | 7.7% | 7.0% | 5.74% | 4.1% |
| 2006 | 456 | 7.5% | 6.6% | 4.8% | |
| 2005 | 424 | 5.7% | 4.5% | 3.7% | |
| 2004 | 401 | 6.6% | 3.5% | 3.6% | |
| 2003 | 376 | 1.1% | 2.0% | 2.3% | |
| 2002 | 372 | 2.8% | 3.4% | 2.5% | |
| 2001 | 362 | 2.3% | 2.6% | | |
| 2000 | 354 | 5.0% | 2.5% | | |
| 1999 | 337 | 0.6% | | | |
| 1998 | 335 | 1.8% | | | |
| 1997 | 329 | | | | |

Exhibit I, Chart B

HW All Steam + Nuclear Generation Plant

| <u>Year</u> | <u>Index</u> | <u>Yr/Yr change</u> | <u>Three year Average</u> | <u>Five Year Average</u> | <u>Ten Year Average</u> |
|-------------|--------------|---------------------|---------------------------|--------------------------|-------------------------|
| 2007 | 490 | 7.7% | 7.0% | 5.75% | 4.1% |
| 2006 | 455 | 7.6% | 6.7% | 4.8% | |
| 2005 | 423 | 5.8% | 4.5% | 3.7% | |
| 2004 | 400 | 6.7% | 3.5% | 3.6% | |
| 2003 | 375 | 1.1% | 2.0% | 2.4% | |
| 2002 | 371 | 2.8% | 3.4% | 2.5% | |
| 2001 | 361 | 2.3% | 2.6% | | |
| 2000 | 353 | 5.1% | 2.5% | | |
| 1999 | 336 | 0.6% | | | |
| 1998 | 334 | 1.8% | | | |
| 1997 | 328 | | | | |

Exhibit I, Chart B

[illegible]

EXHIBIT F

ANTICIPATED COMPONENTS OF CAPITAL COSTS AND SCHEDULE

**Combined Application of South Carolina Electric & Gas Company for a
Certificate of Environmental Compatibility and Public Convenience and
Necessity and for a Base Load Review Order
Public Service Commission Docket No. 2008-196-E**

1. INTRODUCTION

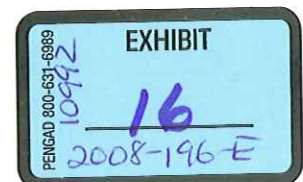
Chart A to this **Exhibit F** provides a summary of the anticipated components of capital cost and the forecasted schedule for incurring them as used by SCE&G in projecting the cash flows, construction work in progress balances, and other financial matters related to the construction of two Westinghouse AP1000 units at V. C. Summer Nuclear Station Units 2 & 3. These projections reflect the applicable inflation adjustments and indices as set forth in **Exhibit I** to this Application and are subject to the risk factors set forth in **Exhibit J** to this Application and to the cost and schedule contingencies requested in the Application. As set forth in the Application, SCE&G will update these projections periodically in its filings with the Office of Regulatory Staff to reflect the actual levels of inflation measured for past periods by the inflation factors and indices reflected in **Exhibit I** to this Application and to reflect any changes related to the contingencies requested in the Application. SCE&G will update the projections of capital costs for remaining future periods based on the same methodology reflected in this **Exhibit F**.

2. THE PUBLIC AND CONFIDENTIAL VERSIONS OF CHART A

Chart A to this **Exhibit F** is being filed in both a public and a confidential version. Both versions provide the full anticipated cost of the Units, year-by-year and in total, including all costs anticipated to be paid under the EPC Contract, all owner's costs and all transmission costs. The only difference between the two versions of the exhibits is the amount of detail given for EPC costs and Owner's costs.

Specifically, the confidential version differs from the public version in that it includes twelve rows of data not included on the non-confidential version. Those rows of data:

- A. Show the anticipated annual payments in 2007 dollars under the EPC Contract with Westinghouse/Stone & Webster broken out into the seven "EPC Categories" that are listed on **Exhibit I** to this Application;
- B. Show the estimated annual payments in 2007 dollars for the "Owner's Cost Categories: Project Target Estimates," that are listed on **Exhibit I** to this Application;
- C. Sum the unescalated project costs by and adjust the yearly sum by the applicable inflation factors, all consistent with the inflation factors listed on **Exhibit I** to this Application for the cost categories involved;



- D. Set forth the contingency amount applicable to each year's estimated construction costs in 2007 dollars, all consistent with the contingency factors listed on **Exhibit I** to this Application for the cost categories involved; and
- E. Adjusts the yearly contingency amount by the inflation factors applicable to the cost categories with which the contingencies are associated, all consistent with the inflation factors listed on **Exhibit I** to this Application.

The sum of these categories of cost data (EPC costs and Owner's costs) and the associated contingencies and inflation amounts equal the first row of data on the public version of **Chart A** to **Exhibit F**, "Plant Cost: Total Net Cash Flow."

SCE&G would emphasize that the public version of **Chart A** to this **Exhibit F** sets forth the full projected cost of the Facility. The public version of **Chart A** provides the specific year-by-year cost projections on which the Commission is asked to establish as the "approved capital cost estimate including specified contingencies" for the Facility, as required in S.C. Code Ann. §§ 58-33-275(A)(2) of the Code of Laws of South Carolina, 1976.

SCE&G is seeking confidential treatment of the data not included in the public version of **Chart A** to **Exhibit F** (the "Confidential Data"), because if disclosed in un-aggregated form, those data could allow competitors of Westinghouse/Stone & Webster to calculate specific prices being charged by Westinghouse/Stone & Webster under the EPC Contract, both in aggregate and for particular items or categories of items supplied. Westinghouse/Stone & Webster considers this pricing information to be proprietary information in the nature of a trade secret and has taken careful steps to maintain the confidentiality of this information. Westinghouse/Stone & Webster believes that public release of such data could injure Westinghouse/Stone & Webster commercially in its negotiations for the sale of other units.

SCE&G intends to make the Confidential Data available to parties who sign an appropriate confidentiality agreement.

ANTICIPATED CONSTRUCTION SCHEDULECombined Application of South Carolina Electric & Gas Company for a
Certificate of Environmental Compatibility and Public Convenience and
Necessity and for a Base Load Review Order

(Thousands of \$)

V.C. Summer Units 2 and 3 - Summary of SCE&G Capital Cost Components

| <i>Plant Cost Categories</i> | <u>Total</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> | <u>2011</u> | <u>2012</u> | <u>2013</u> | <u>2014</u> | <u>2015</u> | <u>2016</u> | <u>2017</u> | <u>2018</u> |
|-------------------------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Fixed with Adjustment | | | | | | | | | | | | | |
| Firm with Fixed Adjustment A | | | | | | | | | | | | | |
| Firm with Fixed Adjustment B | | | | | | | | | | | | | |
| Firm with Indexed Adjustment | | | | | | | | | | | | | |
| Actual Craft Wages | | | | | | | | | | | | | |
| Non-Labor Costs | | | | | | | | | | | | | |
| Time & Materials | | | | | | | | | | | | | |
| Owners Costs | | | | | | | | | | | | | |
| Total Unescalated Project Costs | | | | | | | | | | | | | |
| Project Cost Escalation | | | | | | | | | | | | | |
| Contingency(2007 \$) | | | | | | | | | | | | | |
| Contingency Escalation | | | | | | | | | | | | | |
| Total Net Cash Flow | 5,411,067 | 21,473 | 182,826 | 458,170 | 637,192 | 696,561 | 734,258 | 752,043 | 680,621 | 502,767 | 376,627 | 240,217 | 128,312 |
| Transmission Projects | | | | | | | | | | | | | |
| Total Net Cash Flow | 638,020 | - | - | 378 | - | - | 1,666 | 15,555 | 46,282 | 73,014 | 4,286 | 189,523 | 307,316 |
| Total Project Cash Flow | 6,049,087 | 21,473 | 182,826 | 458,548 | 637,192 | 696,561 | 735,924 | 767,598 | 726,903 | 575,781 | 380,913 | 429,740 | 435,628 |
| Cumulative Project Cash Flow | | 21,473 | 204,299 | 662,847 | 1,300,039 | 1,996,600 | 2,732,524 | 3,500,122 | 4,227,025 | 4,802,806 | 5,183,719 | 5,613,459 | 6,049,087 |
| AFUDC(Capitalized Interest) | 264,289 | 645 | 5,204 | 17,292 | 24,459 | 31,461 | 34,135 | 34,466 | 33,650 | 28,726 | 13,395 | 17,577 | 23,279 |
| Gross Construction | 6,313,376 | 22,118 | 188,030 | 475,840 | 661,651 | 728,022 | 770,059 | 802,064 | 760,553 | 604,507 | 394,308 | 447,317 | 458,907 |
| Construction Work in Process | | 22,118 | 210,148 | 685,988 | 1,347,639 | 2,075,661 | 2,845,720 | 3,647,784 | 4,408,337 | 5,012,844 | 5,407,152 | 5,854,469 | 6,313,376 |

Notes:

AFUDC rate applied

5.52%

The AFUDC rate applied is the current SCE&G rate. AFUDC rates can vary with changes in market interest rates, SCE&G's embedded cost of capital, capitalization ratios, construction work in process, and SCE&G's short-term debt outstanding.

Confidential

Public